V5506 G4 V.44

CONTENTS

Page

Proceedings of the Forty-fifth Annual Meeting of the Geological Society of America, held at Cambridge, Massachusetts, Wednesday, Thursday, and Friday, December 28, 29, and 30, 1932; by CHARLES P. BERKEY, *Secretary*. 1
Session of Wednesday morning, December 28 6
Report of the Council 6
President's report 6
Secretary's report 10
Treasurer's report 15
Auditor's certificate 22
Finance Committee's report 23
Editor's report 27
Appointment of tellers and inspectors of election 29
Election of Representative, Correspondents, and Fellows 29
Necrology 31
George Irving Adams 31
Truman Heminway Aldrich 31
Albert Perry Brigham 31
Benjamin Kendall Emerson 31
Adam Capen Gill 32
Ulysses Sherman Grant 32
John Walter Gregory 32
Erasmus Haworth 32
William Jacob Holland 32
Ernest Howe 32
J Claude Jones 32
Johan Kiaer 32
George Frederick Kunz 32
Sidney Powers 33
Johan August Udden 33
Johan Herman Lie Vogt 33
Addresses of welcome 33
Address of welcome; by Donald H. McLaughlin 33
Presentation of scientific papers 34
Session of Wednesday afternoon, December 28 34
Presentation of scientific papers 35
Meetings of Wednesday evening, December 28 35
Presentation to Joseph Stanley-Brown; by Charles P. Berkey 36
Response by Mr. Stanley-Brown 38
Presentation to Edward B. Mathews; by Alfred C. Lane 40
Response by Professor Mathews 41
Presentation to Charles P. Berkey; by W. B. Scott 42
Response by Doctor Berkey 42
Presidential address: The Depths of the Earth; by Reginald A. Daly 43
Annual smoker 43

Page

Session of Thursday morning, December 29 43
Special business session 43
Vote on the adoption of new By-Laws 43
Address of the retiring President of the Paleontological Society: Development of Invertebrate Paleontology in America; by R. S. Bassler 44
Presentation of scientific papers 44
Business session (continued) 44
New By-Laws adopted 44
Election of Councilors and Officers 45
Report of Committee on Stratigraphic Practice, Principles, and Nomenclature 46
Presentation of scientific papers 46
Address of the retiring President of the Mineralogical Society: The New Mineralogy; by Alexander N. Winchell 46
Presentation of scientific papers 46
Business session (continued) 46
Session of Thursday afternoon, December 29 47
Presentation of scientific papers 47
Formal closing of 1932 business sessions 48
Presentation of scientific papers 48
Annual dinner 49
Presentation to Herman L. Fairchild; by David White 50
Response of Professor Fairchild 53
Presentation of the Penrose Medal to Edward Oscar Ulrich 57
Presentation address; by W. O. Hotchkiss 57
After dinner program 59
Session of Friday morning, December 30 60
Presentation of scientific papers 60
Report on the Division of Geology and Geography of the National Research Council; by Chester R. Longwell, *Representative* 60
Presentation of scientific papers 63
Session of Friday afternoon, December 30 63
Presentation of scientific papers 63
Resolution of thanks adopted by the session 64
Register of Cambridge meeting 65
Titles and abstracts of papers (arranged alphabetically by authors) ... 67
Further note on the use of the word geology [abstract]; by Frank D. Adams 67
Revision of the Spokane flood [abstract]; by Ira S. Allison 68
Knoxville-Shasta succession in California and the Later Mesozoic record [abstract]; by F. M. Anderson 68
Stratigraphy and orogeny of the Dahra Range, Algeria [abstract]; by Robert Van Vleck Anderson 69
Lake Atitlan [abstract]; by Wallace W. Atwood 70
Is there tillite in the Triassic of Massachusetts? [abstract]; by Wallace W. Atwood 70

PUBLIC LIBRARY
DETROIT MICH.

Page

Glaciation of the Park Range, Colorado [abstract]; by Wallace W. Atwood, Jr. 70
Terraces of the Yellow River, China [abstract]; by George B. Barbour 71
Geology of the central and southern parts of the Wind River Basin [abstract]; by Clyde Max Bauer 71
Geology of the Hot Springs district, Virginia [abstract]; by Arthur Bevan 72
Granites of the Front Range: the Longs Peak-Saint Vrain batholith [abstract]; by Margaret Fuller Boos and C. Maynard Boos.. 72
"Iron Dike" [abstract]; by Margaret Fuller Boos and C. Maynard Boos 73
System, CaO-FeO-SiO_2 [abstract]; by N. L. Bowen, J. F. Schairer, and E. Posnjak 74
Stratigraphy and fauna of the Fuson-Cloverly formation in Montana, Wyoming, and South Dakota [abstract]; by Barnum Brown 74
Glacial lakes and ice movements in Millers River valley, Massachusetts [abstract]; by Thomas C. Brown 74
Geologic problems of the Beartooth-Bighorn region [abstract]; by Walter H. Bucher, W. T. Thom, Jr., and R. T. Chamberlin 75
Chambersburg (Harrisburg) peneplain in the piedmont of Maryland and Pennsylvania [abstract]; by Marius R. Campbell 77
Hamilton Catskill [abstract]; by George Halcott Chadwick 77
Further evidence regarding the age of the auriferous gravels [abstract]; by Ralph W. Chaney 78
Structure of the Rocky Mountains of northwestern Montana [abstract]; by Charles H. Clapp 78
Structure and stratigraphy of the Appalachians of southern Quebec [abstract]; by T. H. Clark 79
Sierra Nevada batholiths and the mother lode [abstract]; by Ernst Cloos 79
Attempt to zone the North American Jurassic on the basis of its brachiopods [abstract]; by C. H. Crickmay 80
Mount Jura investigation [abstract]; by C. H. Crickmay 80
Glacial and Recent history of the Black River valley, Vermont [abstract]; by Irving B. Crosby 81
Relation of the drumlins to the glacial clay of the Boston Basin [abstract]; by Irving B. Crosby 81
Glacial marginal shores and the marine limit in Massachusetts [abstract]; by Irving B. Crosby and Richard J. Lougee 82
Geological map of Texas [abstract]; by N. H. Darton 82
Work of sheetfloods [abstract]; by W. M. Davis 83
Structure of the Tertiary formations of Maryland [abstract]; by Lincoln Dryden 83
Structure and physiography of the southern Wasatch Mountains, Utah [abstract]; by A. J. Eardley 83

Page

Subsurface Devonian and Silurian sections across northern Pennsylvania and southern New York [abstract]; by Charles R. Fettke 84
Map showing the seismic epicenters, sonic sounding, and gravity stations in the West Indies and contiguous areas [abstract]; by R. M. Field..... 84
Borehole in the Bahamas [abstract]; by R. M. Field and H. H. Hess 85
Late-Pleistocene sequence in the Connecticut Valley [abstract]; by Richard Flint 85
Complex diabasic intrusions causing local contact fusion [abstract]; by Richard E. Fuller..... 86
Contact metamorphism of the slates of Minnesota by granite and by gabbro magmas [abstract]; by Frank F. Grout..... 86
Cambrian oölitic hematite in the Reagan sandstone of Oklahoma [abstract]; by Albert O. Hayes..... 86
Origin of the Blue Ridge escarpment [abstract]; by Douglas Johnson 87
Structural history of the fracture systems at Grass Valley, California [abstract]; by W. D. Johnston, Jr., and Ernst Cloos..... 88
Pleistocene gravels of Iowa [abstract]; by George F. Kay and Paul T. Miller..... 88
Orogeny of Maine granites [abstract]; by Arthur Keith..... 89
Desert mountains of erosion [abstract]; by Charles Keyes..... 89
Permian stratigraphy in trans-Pecos Texas [abstract]; by Philip B. King 90
Aniakchak and Veniaminof volcanoes, Alaska [abstract]; by Russell S. Knappen..... 90
Dissected pediments in the Magdalena district, New Mexico [abstract]; by A. H. Koschmann and G. F. Loughlin..... 91
Weathering of the Medford diabase [abstract]; by Alfred C. Lane and A. Wolf..... 92
Origin of the schists and granite of the Wachusett-Coldbrook Tunnel, Massachusetts [abstract]; by Esper S. Larsen and Frederick K. Morris..... 92
Rotated faults in the Desert Range, southern Nevada [abstract]; by Chester R. Longwell..... 93
Thrust faults of peculiar type [abstract]; by Chester R. Longwell. 93
Meteorite scars in the Carolinas [abstract]; by F. A. Melton and William Schriever 94
Triassic influences on Appalachian drainage [abstract]; by Howard A. Meyerhoff and Elizabeth W. Olmsted..... 94
Stratigraphic classification of Pennsylvanian and Permian beds in the Mid-Continent region [abstract]; by Raymond C. Moore.... 95
Dissipation of the Wisconsin Glacier in Maine [abstract]; by Edward H. Perkins..... 95

Page

Extinct Lake San Augustin, New Mexico [abstract]; By William E. Powers 96
Notes on the physiography of Cumberland Gap [abstract]; by John L. Rich 97
Rock resistance and interfluvial degradation as dominant factors in geomorphology [abstract]; by John L. Rich..... 97
Hydrographic data and their evaluation [abstract]; by G. T. Rude. 97
Paleozoic planktonic faunas [abstract]; by Rudolf Ruedemann... 98
Sargasso-Seas in Paleozoic time [abstract]; by Rudolf Ruedemann 98
Alpine land forms of the western United States [abstract]; by Richard Joel Russell..... 98
Canyons off the New England coast [abstract]; by Francis P. Shepard 99
Origin of Georges Bank [abstract]; by F. P. Shepard, J. R. Trefethen, and G. V. Cohee..... 100
Late Mesozoic and Early Tertiary in Patagonia [abstract]; by George Gaylord Simpson..... 100
Silurian sections near Mount Union, central Pennsylvania [abstract]; by Frank McKim Swartz..... 101
Sierra Maestra of Cuba; part of the northern rim of the Bartlett Trough [abstract]; by Stephen Taber..... 101
Making of arcuate mountain ranges of Asia [abstract]; by Frank Bursley Taylor 102
Stratigraphy and tectonics of the Proterozoic formations in the southern part of central Siberia [abstract]; by A. N. Tchurakov. 102
Traces of Proterozoic glaciation in the southern part of central Siberia [abstract]; by A. N. Tchurakov..... 102
Discovery of Upper Cretaceous fauna in the Asphalt Ridge, Utah [abstract]; by I. P. Tolmachoff..... 103
Silver-lead tungsten mineralization at Silver Mine, Missouri [abstract]; by Carl Tolman..... 103
Physical and chemical characteristics of the sediments of Lake Mendota, a fresh water lake of Wisconsin, and a preliminary survey of the microflora, with special reference to the precipitation of calcium carbonate [abstract]; by W. H. Twenhofel, Fred T. Williams, and Elizabeth McCoy..... 104
Simpson group of Oklahoma [abstract]; by E. O. Ulrich..... 105
Present distribution and thickness of Mesozoic systems [abstract]; by Walter A. Ver Wiebe..... 106
Rôle of proglacial waterfalls in the valley development of central New York [abstract]; by O. D. von Engeln..... 106
Shear-control of dikes and sills near Eugene, Oregon [abstract]; by Chester W. Washburne..... 107
Basic igneous rocks of the Roseburg Quadrangle, Oregon [abstract]; by Francis G. Wells and Aaron C. Waters..... 107
Bone-beds and crinoidal sands of the Delaware limestone of central Ohio [abstract]; by Lewis G. Westgate and Richard P. Fischer.. 108

Page

Catskill sedimentation begins in Pennsylvania [abstract]; by Bradford Willard 108
Certificate of Incorporation and Code of By-Laws of the Geological Society of America, Inc..... 109
Officers, Correspondents, and Fellows of the Geological Society of America 123
Proceedings of the Thirty-first Annual Meeting of the Cordilleran Section of the Geological Society of America, held at Stanford University, California, April 8 and 9, 1932; by RALPH W. CHANEY, *Secretary*..... 145
Sessions of April 8 and 9..... 146
Election of officers..... 147
Memorial 147
Titles and abstracts of papers..... 147
Structure of a portion of the southern Santa Lucia Range [abstract]; by W. Layton Stanton, Jr..... 147
Certain features of the volcanic sequence and geomorphology of Mount Rainier [abstract]; by Howard A. Coombs..... 148
Geology and paleontology of a portion of the metropolitan district of Los Angeles, California [abstract]; by E. K. Soper and U. S. Grant, IV..... 148
Bedrock complex of the Sierra Nevada, west of the southern end of the Mother Lode [abstract]; by N. L. Taliaferro.... 149
Glacial features along Columbia River near Lake Chelan [abstract]; by Aaron Clement Waters..... 150
Pliocene sequence in the Berkeley Hills [abstract]; by Bruce L. Clark 151
Structural relationships of the coast and continental margin of northern California [abstract]; by John H. Maxson..... 152
Is present tilting in North America due to glacial melting? [abstract]; by Beno Gutenberg..... 152
Relation of coccolithophores to the origin of Cretaceous chalk [abstract]; by Donald L. Frizzel..... 154
Piedmont benchlands [abstract]; by W. M. Davis..... 154
Rain-wash profiles of humid regions [abstract]; by Andrew C. Lawson 154
Geologic cross-sections through the coast ranges immediately north of San Francisco Bay [abstract]; by Charles E. Weaver 155
Age of Meteor Crater, Arizona [abstract]; by Eliot Blackwelder 156
Age of Columbia River and Lower Canyon [abstract]; by Edwin T. Hodge..... 156
Geology of Ariel Dam site [abstract]; by Ira A. Williams.... 157
Upper Eocene mammals from the Sespe, north of the Simi Valley, California [abstract]; by Chester Stock..... 158
Upper Oligocene mammalian fauna from the Sespe of the Las Posas Hills, California [abstract]; by Chester Stock..... 158

Page

Petrographic study of quicksilver ores and associated minerals from Pike County, Arkansas [abstract]; by Rudolph G. Sohlberg 158
Device for sampling heavy minerals [abstract]; by George H. Otto 159
Anauxite as a secondary mineral in some volcanic rocks of California and Arizona [abstract]; by Austin F. Rogers... 159
Certain pegmatite facies of the Wallowa Mountains batholith in northeastern Oregon [abstract]; by G. E. Goodspeed.... 160
Relation between silver content and tetrahedrite in the ores of some western American mines [abstract]; by Harry V. Warren 160
Occurrence of monazite in a granodiorite pegmatite in Riverside County, California [abstract]; by Leland H. Dykes.... 161
Comparison of two granites [abstract]; by W. J. Miller..... 161
Endomorphic alteration of basaltic flows [abstract]; by Richard E. Fuller..... 162
Segregations from the fractional crystallization of basalt [abstract]; by Richard E. Fuller..... 163
Origin of the Pilares Pipe [abstract]; by Donald D. Smythe.. 163
Some inter-relations between phases of alteration and types of rocks in the Tonopah mining district, Nevada [abstract]; by Ian Campbell..... 164
Convenient method of using refractive index liquids [abstract]; by Austin F. Rogers..... 165
Miocene foraminifera from Reliz Canyon, Monterey County, California [abstract]; by Robert M. Kleinpell..... 165
Contact conditions of some chromite deposits in serpentine in the Klamath Mountains [abstract]; by John H. Maxson.... 166
Cenozoic history of the San Gabriel Mountains of California [abstract]; by W. J. Miller..... 166
Grooving of rock surfaces by sand-laden currents [abstract]; by Eliot Blackwelder..... 167
Microstructures of the gold quartz veins at Cornucopia, Oregon [abstract]; by G. E. Goodspeed..... 167
Oligocene sediments of the Yakataga-Controller Bay region, Alaska [abstract]; by N. L. Taliaferro..... 167
Fauna of the Yakataga formation of Southern Alaska [abstract]; by Bruce L. Clark..... 168
Geological reconnaissance of the Pryor Mountains, Montana [abstract]; by Donald L. Blackstone..... 168
Land movements and sedimentation [abstract]; by M. Y. Williams 169
Experiments testing seismographic methods for determining crustal structure [abstract]; by Beno Gutenberg, Harry O. Wood, and John P. Buwalda..... 170

Page

Observations on the stratification of beach deposits [abstract]; by Warren O. Thompson 171
Annual dinner 172
Register of the 1932 meeting 172
Proceedings of a joint session of Section E of the American Association for the Advancement of Science and members of the Geological Society of America, held at Atlantic City, New Jersey, December 27, 1932; by KIRTLEY F. MATHER, *Secretary* 173
Session of Tuesday, December 27 173
Report of the Secretary 173
Titles and abstracts of papers 174
Continental shelves as dynamic zones: a toggling-shelf orogeny [abstract]; by Bert Russell 174
Statistical investigations of recent evidences of subsidence along the Atlantic Coast [abstract]; by William Fitch Cheney, Jr. 174
Changes in level indicated by marginal terraces and other glacial lake deposits in central Massachusetts [abstract]; by Thomas C. Brown 175
On the determination of mean sealevel [abstract]; by H. A. Marmer 176
Recent changes in level along the Atlantic Coast [abstract]; by Charles Wendell Townsend 176
Upper Devonian of the New York region [abstract]; by George Halcott Chadwick 177
Pleistocene changes of sealevel [abstract]; by C. Wythe Cooke. 177
New Jersey Coast—the two feet per century subsidence myth [abstract]; by Henry B. Kummel 178
Note on the thickness and structure of the Triassic series in Pennsylvania [abstract]; by Dean G. McLaughlin 178
Proceedings of the Twenty-fourth Annual Meeting of the Paleontological Society, held at Cambridge, Massachusetts, December 28, 29, and 30, 1932; by B. F. HOWELL, *Secretary* 181
Session of Wednesday, December 28 184
Report of the Council 184
Secretary's report 184
Treasurer's report 186
Election of officers and members 187
Election of Fellows and Correspondents 188
Memorials 189
Report of Service Committee 189
New business 190
Presentation of papers 190
Titles and abstracts of papers 190
Oboloid brachiopods in the Belt series of Montana [abstract]; by Carroll Lane Fenton and Mildred Adams Fenton 190

Page

Preliminary generalized Cambrian time scale [abstract]; by Charles Elmer Resser 190
The *Olenellus* zone and its faunas in the Appalachians [abstract]; by C. E. Resser and B. F. Howell 191
Upper Cambrian Foraminifera [abstract]; by B. F. Howell and J. R. Sandidge 191
An unusual brine from the Potsdam of central New York [abstract]; by David W. Turner 192
Middle Ordovician annelid jaws from Minnesota [abstract]; by Clinton R. Stauffer 192
The Ordovician Trenton group in New York: Stratigraphy of the lower and upper limestone formations [abstract]; by G. Marshall Kay 193
Arenaceous Foraminifera from the Lower Paleozoic of Oklahoma [abstract]; by W. L. Moreman 193
Evaluation of internal characters in the classification of the brachiopods [abstract]; by G. Arthur Cooper 193
Clinton of western New York [abstract]; by J. T. Sanford ... 194
Session of Thursday, December 29 194
Joint session with the Geological Society of America 194
Business session 194
Presentation of papers 195
Titles and abstracts of papers 195
Silurian Stromatoporoids of Gaspé, Quebec [abstract]; by W. A. Parks 195
Scolecodonts from the Silurian Edgewood formation [abstract]; by Paul H. Dunn 196
Silurian and Devonian strata of the Littleton quadrangle, New Hampshire [abstract]; by Marland Billings and Arthur B. Cleaves 196
Discovery of a fossiliferous Lower Devonian channel deposit at Beartooth Butte, Wyoming [abstract]; by Erling Dorf .. 197
The Hamilton group of eastern Pennsylvania [abstract]; by Arthur B. Cleaves and Bradford Willard 197
Traverse-Hamilton ostracode correlations [abstract]; by Aldred S. Warthin, Jr. 197
Carboniferous tracks from Nova Scotia [abstract]; by C. M. Sternberg 198
A skull of the extraordinary Patagonian Eocene ungulate *Trigonostylops* [abstract]; by G. G. Simpson 198
Discovery of an Upper Eocene Mammalian fauna in southern Saskatchewan [abstract]; by Loris S. Russell and R. T. D. Wickenden 199
Carnivora of the Sespe Upper Eocene, Simi Valley region, California [abstract]; by Chester Stock 199
Carnivora of the Sespe Oligocene, Las Posas Hills, California [abstract]; by Chester Stock 199

Page

Skeletons of three oreodonts [abstract]; by Frederick B. Loomis 199
Notes on the Tertiary geology of western Nebraska, western South Dakota, eastern Wyoming, and related areas [abstract]; by Harold J. Cook..... 200
Richmond mastodon [abstract]; by J. T. Sanford..... 200
Stratigraphy of the Hamilton group of eastern New York [abstract]; by G. Arthur Cooper..... 200
Upper Devonian rocks at Ithaca, New York [abstract]; by Kenneth E. Caster..... 201
Stratigraphic relationships in northwestern Pennsylvania [abstract]; by Kenneth E. Caster..... 202
Early Osage, Mississippian, beds of the Ozark region [abstract] by Raymond C. Moore..... 203
Pennsylvanian Mollusca from Michigan [abstract]; by William A. Kelly 204
Foraminifera from the Mesozoics of Montana [abstract]; by John R. Sandidge..... 204
Session of Friday, December 30..... 204
Business session 204
Presentation of papers..... 205
Titles and abstracts of papers..... 205
Pennsylvanian and Permian facies faunas [abstract]; by Raymond C. Moore 205
Range and distribution of the genus *Lepidocyclina* Gümbel [abstract]; by Willard Berry..... 205
Stratigraphy of the marine Eocene of southwestern Oregon [abstract]; by F. E. Turner..... 205
The sediments of the Continental Shelf off the northeastern United States [abstract]; by H. C. Stetson..... 206
New turtles from the Belly River formation of Alberta [abstract]; by W. A. Parks..... 207
Scolecodonts [abstract]; by Carey Croneis and Harold W. Scott 207
Scolecodonts and conodonts from fissure fillings in the Niagaran of Illinois [abstract]; by Carey Croneis and Harold W. Scott 207
Scolecodonts from the Decorah formation of Missouri [abstract]; by Carey Croneis and Paul Gries..... 208
Scolecodonts from the Upper Richmond of Illinois [abstract]; by Franklin C. Potter..... 208
Galena and Platteville faunas in northwestern Illinois [abstract]; by Harold W. Scott..... 209
Foraminiferal correlation of the Osgood formation [abstract]; by Paul H. Dunn..... 209
Revision of *Ligonodina* Ulrich and Bassler, 1926, and *Prioniodus* Pander, 1856 [abstract]; by Chalmer L. Cooper..... 210

Page

Multiple glaciation in the southern Sawatch range, Colorado [abstract]; by William E. Powers 210
New Mississippian starfish [abstract]; by Carey Croneis and Franklin C. Potter 211
Conodonts from the upper and middle novaculite at Caddo Gap, Arkansas [abstract]; by Chalmer L. Cooper 211
Studies in North American Mississippian corals, part I [abstract]; by Brandon Grove 212
Algal bioherms in the Belt series of Montana [abstract]; by Carroll Lane Fenton and Mildred Adams Fenton 212
A Lower Devonian flora from Beartooth Butte, Wyoming [abstract]; by Erling Dorf 213
Megalopteris and the giant winged Cardiocarps [abstract]; by David White 213
A Tertiary flora from east-central Africa [abstract]; by Ralph W. Chaney 213
Alternating layers of lava and glacial till in the rim rocks surrounding Crater Lake [abstract]; by Wallace W. Atwood, Jr. 214
Correlation of pre-Illinoian drifts of Illinois [abstract]; by Paul MacClintock 214
Vote of thanks to the local committee 215
Register of the Cambridge Meeting 215
Minutes of the Pacific Coast Branch of the Paleontological Society 216
Election of officers 216
Presentation of papers 216
Titles and abstracts of papers 216
Zonal distribution and foreign affinities of Turritellas occurring in Cretaceous, Tertiary and Quaternary deposits on the Pacific Coast of North America [abstract]; by Charles W. Merriam 216
Stratigraphic significance of Foraminifera from the type San Lorenzo formation, California [abstract]; by Henry D. Hobson 217
Stratigraphic and faunal relations of the Keasey formation of the Oligocene of Oregon [abstract]; by Hubert G. Schenck 217
Eocene Llajas formation, Ventura County, California [abstract]; by Hubert McMasters 217
Fusilinids of the McCloud and Nosoni formations of northern California [abstract]; by Harry E. Wheeler 218
Hyaenognathus from the late Pliocene of the Coso Mountains, California [abstract]; by Chester Stock 218
Anchitheriine horses from the *Merychippus* zone, North Coalinga district, California [abstract]; by Francis D. Bode 219
A new otter from later Cenozoic beds, southwestern Idaho [abstract]; by E. L. Furlong 219

Page

Pleistocene rodent fauna from the Carpinteria asphalt deposits [abstract]; by Robert W. Wilson 219
Notes on *Searlesia* [abstract]; by U. S. Grant IV 220
New evidence of the age of the John Day formation [abstract]; by Edwin T. Hodge 220
Officers, Correspondents, Fellows, and members of the Paleontological Society 221
Proceedings of the Thirteenth Annual Meeting of the Mineralogical Society of America, held at Cambridge, Massachusetts, December 28 and 29, 1932; by Frank R. Van Horn, *Secretary* 235
Session of Wednesday afternoon, December 28 235
Election of officers and Fellows 236
Report of the Secretary 236
Report of the Treasurer 237
Report of the Editor 237
Report of the New Committee on Nomenclature and Classification of Minerals 238
Report of the representative on the National Research Council ... 238
Report of the Committee on Cooperation with the Secretary of the XVI International Geological Congress, along the lines of Mineralogy and Petrology 238
New business 239
Memorial biography 239
Presentation of papers 239
Session of Thursday morning, December 29 240
Presentation of papers 240
Joint session with the Geological Society of America, December 29 240
Luncheon meeting, December 29 241
Session of Thursday afternoon, December 29 241
Presentation of papers 241
Vote of thanks 242
The Depths of the Earth; Presidential address by Reginald A. Daly 243
Development of Invertebrate Paleontology in America; Presidential address by R. S. Bassler 265
Memorials 287
George Irving Adams; by Ernest F. Burchard 288
Truman Heminway Aldrich; by Julia Gardner 301
Albert Perry Brigham; by Arthur Keith 307
Benjamin Kendall Emerson; by Frederick B. Loomis 317
Adam Capen Gill; by Gilbert D. Harris 325
Ulysses Sherman Grant; by H. Foster Bain 328
Erasmus Haworth; by Raymond C. Moore 338
William Jacob Holland; by Henry Leighton 347
Joseph Paxton Iddings; by Edward B. Mathews 352
J Claude Jones; by George D. Louderback 374
George Frederick Kunz; by Herbert P. Whitlock 377
Arthur Gray Leonard; by T. T. Quirke 395

Page

Johan August Udden; by Charles Laurence Baker..... 402
John Walter Gregory; by Chester R. Longwell..... 414
Johan Kiær; by Percy E. Raymond..... 415
Johan Herman Lie Vogt; by F. L. Ransome..... 419
Classification and Nomenclature of Rock Units; Joint Committee Report.. 423
Rôle of Analysis in Scientific Investigation; by Douglas Johnson..... 461
"Catskill" Sedimentation in Pennsylvania; by Bradford Willard..... 495
Hydrographic Data; by Gilbert T. Rude..... 517
Origin of Domes in Lincoln and Mitchell Counties, Kansas; by Kenneth K. Landes and J. W. Ockerman..... 529
Laboratory Equipment for Geological Instruction; by Carey Croneis and G. Frederick Shepherd..... 541
Chambersburg (Harrisburg) Peneplain in the Piedmont of Maryland and Pennsylvania; by Marius R. Campbell..... 553
Palisade Glacier of the High Sierra of California; by O. D. von Engeln.... 575
Subsurface Devonian and Silurian sections across northern Pennsylvania and southern New York; by Charles R. Fettke..... 601
Lake Atitlan; by Wallace W. Atwood..... 661
Eldoran Epoch of the Pleistocene Period; by George F. Kay and Morris M. Leighton 669
New Version of the Spokane Flood; by Ira S. Allison..... 675
Three Oreodont Skeletons from the Lower Miocene of the Great Plains; by F. B. Loomis..... 723
Preliminary Generalized Cambrian Time Scale; by Charles Elmer Resser.. 735
Hamilton Group of Eastern Pennsylvania; by Bradford Willard and Arthur B. Cleaves 757
Terraces and Coulees along the Columbia River near Lake Chelan, Washington; by Aaron Clement Waters..... 783
Further Note on the Earliest Use of the Word "Geology"; by Frank D. Adams 821
Present Distribution and Thickness of Mesozoic Systems; by Walter A. Ver Wiebe 827
Angular Coal Fragments as Evidence of a Long Time Break in Pennsylvanian Sedimentation in Eastern Kansas; by John L. Rich..... 865
Attempt to Zone the North American Jurassic on the Basis of its Brachiopods; by C. H. Crickmay..... 871
Mount Jura Investigation; by C. H. Crickmay..... 895
Alpine Land Forms of Western United States; by Richard Joel Russell.... 927
Carboniferous Tracks from Nova Scotia; by C. M. Sternberg..... 951
Late-Pleistocene Sequence in the Connecticut Valley; by Richard Foster Flint 965
Contact Metamorphism of the Slates of Minnesota by Granite and by Gabbro Magmas; by Frank F. Grout..... 989
Glacial Epochs of the Santa Monica Mountains, California; by W. M. Davis 1041
Algal Reefs or Bioherms in the Belt Series of Montana; by Carroll Lane Fenton and Mildred Adams Fenton..... 1135

Page
Pleistocene History of the Huangho; by George B. Barbour..... 1143
Bone Beds and Crinoidal Sands of the Delaware Limestone of Central Ohio; by Lewis G. Westgate and Richard P. Fischer..... 1161
Middle Ordovician Polychaeta from Minnesota; by Clinton R. Stauffer... 1173
Physiography and Structure at Cumberland Gap; by John L. Rich..... 1219
Knoxville-Shasta Succession in California; by F. M. Anderson..... 1237

ILLUSTRATIONS

PLATES

		Facing page
Plate	1—BURCHARD: Portrait of George Irving Adams	288
"	2—GARDNER: Portrait of Truman Heminway Aldrich	301
"	3—KEITH: Portrait of Albert Perry Brigham	307
"	4—LOOMIS: Portrait of Benjamin Kendall Emerson	317
"	5—HARRIS: Portrait of Adam Capen Gill	325
"	6—BAIN: Portrait of Ulysses Sherman Grant	328
"	7—MOORE: Portrait of Erasmus Haworth	338
"	8—LEIGHTON: Portrait of William Jacob Holland	347
"	9—MATHEWS: Portrait of Joseph Paxton Iddings	352
"	10—LOUDERBACK: Portrait of J Claude Jones	374
"	11—WHITLOCK: Portrait of George Frederick Kunz	377
"	12—QUIRKE: Portrait of Arthur Gray Leonard	395
"	13—BAKER: Portrait of Johan August Udden	402
"	14—LONGWELL: Portrait of John Walter Gregory	414
"	15—CRONEIS AND SHEPHERD: Stream Table	543
"	16— " " " Stream table demonstration of delta formation	545
"	17— " " " Results of Pressure Box experiments.	550
"	18— " " " Results of Pressure Box experiments.	551
"	19—CRICKMAY: Jurassic brachiopods	890
"	20— " Jurassic brachiopods	891
"	21— " Jurassic brachiopods	892
"	22— " Jurassic brachiopods	893
"	23— " Jurassic Fossils	915
"	24— " Jurassic Fossils	916
"	25— " Jurassic Fossils	917
"	26— " Jurassic Fossils	918
"	27— " Jurassic Fossils	919
"	28— " Jurassic Fossils	920
"	29— " Jurassic Fossils	921
"	30— " Jurassic Fossils	922
"	31— " Jurassic Fossil	923
"	32— " Jurassic Fossils	924
"	33— " Jurassic Fossil	925
"	34— " Jurassic Fossils	926
"	35—STERNBERG: Carboniferous tracks	962
"	36— " Carboniferous tracks	963
"	37— " Carboniferous tracks	964
"	38—GROUT: Photomicrographs of Minnesota slate, graywacke, and mica schist	998
"	39— " Textures of slate hornfelses near the Duluth gabbro, Minnesota	1010
"	40—DAVIS: Point Dume from the air	1041

		Facing page
Plate 41—DAVIS:	(A) Sand dune at east end of Calleguas-Sycamore segment	1118
	(B) Looking west from Sycamore Head toward Point Mugu	1118
" 42— "	(A) Confirmation Bight	1119
	(B) West end of Confirmation Bight	1119
" 43— "	(A) Siquis-Trancas Segment	1120
	(B) General view of Point Dume	1120
" 44— "	(A) Highway outcrop on Point Dume	1121
	(B) Zuma Creek	1121
" 45— "	Beach spit at mouth of Malibu Creek	1122
" 46— "	Dume terrace cut back by Monic cliffs	1123
" 47— "	Palisades (Monic cliffs) of Santa Monica	1124
" 48— "	(A) Beach-fronted, backset beginning of the mountains	1125
	(B) Western half of Confirmation Bight	1125
	(C) Confirmation Bight	1125
" 49— "	(A) West end of Confirmation Bight	1126
	(B) Beach in Confirmation Bight	1126
	(C) Supposed section of Malibu platform and cover	1126
" 50— "	(A) Highway in the Siquis-Trancas segment	1127
	(B) Monic cliffs cut in highway wall back of Trancas-Zuma strandplain	1127
	(C) Highway outcrop on east side of Point Dume	1127
" 51— "	(A) and (B) Highway outcrop on Point Dume	1128
	(C) Point Dume	1128
" 52— "	(A) Monic cliff rising to Dume platform and its cover	1129
	(B) and (C) Dume platform and cover at top of Monic cliff	1129
" 53— "	(A) Low, off-shore ledges	1130
	(B) Highest Monic cliffs	1130
	(C) Floodplain of Topanga Creek	1130
" 54— "	(A) Small fault in tilted block of Dume platform and cover	1131
	(B) Monic cliffs near Castellamare	1131
	(C) Santa Inez Canyon, near Castellamare	1131
" 55— "	(A) and (B) Highway outcrop of Dume platform and cover	1132
	(C) Unconformable contact of Dume cover on inclined Miocene beds	1132
" 56— "	Highway cut between Tecolate and Winchester creeks	1133
" 57—FENTON AND FENTON:	*Collenia frequens* Walcott in Bioherm Core	1138
" 58—BARBOUR:	Terraces of the Fenho and Huangho	1145
" 59—STAUFFER:	Middle Ordovician Polychaeta	1212
" 60— "	Middle Ordovician Polychaeta	1214

Facing page

Plate 61—STAUFFER: Middle Ordovician Polychaeta 1218
" 62—ANDERSON: Shales of the Knoxville Series 1246
" 63— " Basal Conglomerate of the Shasta Series 1256
" 64— " Views along Redbank Creek 1266

FIGURES

JOHNSON: Page

Figure 1—Marine benches 470

WILLARD:

Figure 1—Sketch map showing distribution of localities described. 499
" 2—Diagram illustrating progress of "Catskill" sedimentation 510

RUDE:

Figure 1—Contrast between adequate and inadequate surveys for chart construction 518
" 2—Section of survey sheet showing submarine configuration between San Francisco and Monterey, California 520
" 3—Specimen copies of the Submarine Signal Company's graphic recorder 523
" 4—Radio acoustic triangulation controlling the Georges Bank survey 524
" 5—Submarine valley indenting Georges Bank 526

LANDES AND OCKERMAN:

Figure 1—Index map showing location of domes 530
" 2—Structure contour map of "The Twins," Mitchell County. 532
" 3—Logs of Abercrombie and Gurley wells, Mitchell County. 535

CRONEIS AND SHEPHERD:

Figure 1—Pressure box 547
" 2—Folding machine 551

CAMPBELL:

Figure 1—Profiles of three rivers of the northern Appalachian piedmont region 559
" 2—Section along the Cumberland (Shenandoah) Valley 565
" 3—Map of the Westminster Anticline 568
" 4—Diagrammatic cross-section of the Susquehanna River gorge 572

VON ENGELN:

Figure 1—Section of the crest line and dissected scarp of the High Sierra 576
" 2—Sketch map of the region of the Palisade Glacier 577
" 3—Overflow tongue from upper level to lower level of Palisade Glacier 580
" 4—General view of the site of the Palisade Glacier 580
" 5—Lower level Palisade Glacier 581

Page

Figure 6—Crevasse in upper level Palisade Glacier..... 583
" 7—Glacier table on upper level Palisade Glacier..... 585
" 8—Glacial chute on cross wall below the cirque basin of Palisade Glacier 586
" 9—Roché moutonnee in glacial chute..... 586
" 10—Galiano Glacier, Yakutat Bay, Alaska..... 595
" 11—Pater noster lakes and rock steps..... 596

FETTKE:

Figure 1—Map showing locations of sections..... 602
" 2—Graphic representation of sections described..... 603

ATWOOD:

Figure 1—Sketch map of Lake Atitlan and vicinity..... 661
" 2—Lake Atitlan 662
" 3—Looking across Lake Atitlan at the volcano, Toliman... 663
" 4—Pencil sketches which bring out the rim of Lake Atitlan caldera 665
" 5—East wall of the Lake Atitlan caldera..... 667

ALLISON:

Figure 1—Sketch map of the lower Columbia River basin..... 677
" 2—Sketch map of lower Yakima Valley..... 678
" 3—Chandler Narrows scabland..... 679
" 4—Iceberg mound on north flank of Rattlesnake Hills, Washington 681
" 5—Spokane flood deposits overlying older terrace materials. 683
" 6—Reference map of the area adjacent to the Columbia River between the Wallula gateway and the John Day River 686
" 7—Valley-fill in Willow Creek valley..... 690
" 8—Upland channel utilized by the Spokane Flood..... 693
" 9—Looking southwest from a point near the head of Jones Canyon 693
" 10—Valley mouth filling in Old Lady Canyon, Washington.. 694
" 11—Terraced up-valley portion of the Old Lady Canyon fill.. 694
" 12—Remnant of valley filling..... 696
" 13—Valley-bottom and sidehill deposit in Alkali Canyon.... 697
" 14—Roadcut in valley-bottom silts in Alkali Canyon..... 697
" 15—Scabland along the Columbia River..... 699
" 16—Reference map of the area adjacent to the Columbia River 700
" 17—Till-like deposit in Fifteenmile Creek valley..... 703
" 18—Iceberg-rafted granite fragments..... 704
" 19—Laminated pebbly silts of the Spokane Flood..... 706
" 20—Sidehill dump near The Dalles, Oregon..... 707
" 21—Ortley Anticline 708
" 22—Ortley Anticline 708

Page

Figure 23—Buttes, channels, and sidehill deposits east of Mosier, Oregon 710
" 24—Flood-swept basaltic area near Mosier, Oregon..... 713

LOOMIS:

Figure 1—Front limb of *Merychyus curtus*..... 724
" 2—Hind limb of *Merychyus curtus*..... 725
" 3—Skeleton of *Merychyus curtus*..... 726
" 4—Front foot of *Mesoreodon megalodon*..... 727
" 5—Hind foot of *Mesoreodon megalodon*..... 728
" 6—Skeleton of *Mesoreodon megalodon*..... 729
" 7—Front foot of *Hypselochoerus gregoryi*..... 731
" 8—Hind foot of *Hypselochoerus gregoryi*..... 732
" 9—Skeleton of *Hypselochoerus gregoryi*..... 733

WILLARD AND CLEAVES:

Figure 1—Distribution of the Hamilton group in eastern Pennsylvania 759
" 2—Correlation chart for the Hamilton of eastern Pennsylvania 781

WATERS:

Figure 1—Glacial features in the Waterville-Chelan district..... 783
" 2—Basalt erratic 786
" 3—Group of haystack rocks on the terminal moraine..... 786
" 4—Terraces along the Columbia River..... 788
" 5—Terraces in the west fork of Union Canyon..... 789
" 6—Looking east across two terraces in the east fork of Union Valley 792
" 7—Margin of the 1660 terrace in Union Valley..... 793
" 8—Margin of the 1660 terrace in Union Valley..... 795
" 9—Mouth of a spillway..... 796
" 10—Southwestern part of the Okanogan Quadrangle, Washington 797
" 11—Ridge notch on the west side of Union Valley..... 798
" 12—Ridge notch on the divide between Indian Dan Canyon and Watson Draw..... 799
" 13—Head of Alta Coulee..... 801
" 14—Northern end of Alta Coulee..... 801
" 15—Block diagram of Alta Coulee..... 802
" 16—Mouth of Alta Coulee..... 805
" 17—Retouched photograph of terraces blocking the Washington-Antwine drainage system 807
" 18—Ridge separating the lower Chelan Basin from the upper Columbia Valley 808
" 19—Expansion of the Great Terrace..... 812
" 20—Terraces on the south wall of the Columbia Canyon..... 814

Page

Figure 21—Kettles on the surface of the "Great Terrace"..... 816
" 22—Alta Coulee 819

VER WIEBE:

Figure 1—Triassic system 831
" 2—Jurassic system 839
" 3—Comanchean system 846
" 4—Cretaceous system 852

RICH:

Figure 1—Angular fragments of coal embedded in sandstone..... 865
" 2—Unconformable contact of sandstone..... 865
" 3—Edge of slab of coal as broken out of the sandstone..... 866
" 4—Diagrammatic section 868

RUSSELL:

Figure 1—Nivation depressions 932
" 2—Steep and gentle slope nivation depressions..... 933
" 3—Nivation cirques 935
" 4—Elongate nivation cirques..... 936
" 5—Portion of an elongate nivation cirque..... 937
" 6—Nivation cirque within glacial cirque..... 938
" 7—Solifluction slope 941
" 8—Solifluction slope and altiplanation terrace..... 942

STERNBERG:

Figure 1—Type of *Ornithoidipus pergracilis* n. sp..... 959

FLINT:

Figure 1—Map showing deposits and places referred to in text.... 971
" 2—Cross sections along four planes traced in Figure 1..... 979
" 3—Generalized contours drawn on bedrock surface where known and inferred..... 985

GROUT:

Figure 1—Map of portions of three counties in northeastern Minnesota and adjacent parts of Ontario..... 991
" 2—Slate exposed on an island in Vermilion Lake, Minnesota 993
" 3—Banded slates exposed on Burntside Lake, Minnesota... 994
" 4—Inclusions of biotite schist in Vermilion granite, Minnesota 1000
" 5—Fold in bedded mica schist, Rainy Lake..... 1001
" 6—Diagrammatic sketch of alternating slate and graywacke layers 1002
" 7—Diagram of mineral changes..... 1003
" 8—Mica schist 1006
" 9—Inclusion of Rove slate (Animikie) in Duluth gabbro.... 1009
" 10—Brecciated hornfels 1010
" 11—Banded gabbro and hornfels, south of Disappointment Mountain 1012
" 12—Diagram of mineral changes..... 1013

Page

Figure 13—Triangular diagram of the chief mineral changes when slates are intruded by Duluth gabbro and included in it 1015
" 14—Straight line diagram of the chemical changes when Minnesota slates are altered by contact action..... 1023

DAVIS:

Figure 1—Nonglacial and glacial epochs..... 1047
" 2—Deglacial and agglacial epochs..... 1047
" 3—Outline map of the Santa Monica Mountains..... 1049
" 4—Retreating headlands and prograding bights..... 1053
" 5—Development and abrasion of a detrital cover on an emerged marine platform..... 1055
" 6—Development of small and of large platform covers..... 1060
" 7—Composite cliff in a bight between the simple cliffs of two headlands 1061
" 8—Successive stages in the retreat of a cuspate coast..... 1062
" 9—Development of a detrital cover in a beach-enclosed lagoon 1074
" 10—Small cover-head remnants on a strongly cliffed coast... 1075
" 11—Truncated and trenched detrital fan, fronted by a strandplain 1077
" 12—Dume Cliff and its cover-remnant..... 1079
" 13—Remnant of valley-fill cut by highway wall..... 1080
" 14—Dume Cliff 1082
" 15—Face of Dume Cliff..... 1082
" 16—Diagram of eastern half of Confirmation Bight..... 1083
" 17—Confirmation Bight 1084
" 18—Composite Monic Cliff..... 1084
" 19—Eastern part of Confirmation Bight..... 1085
" 20—Schematic diagram of Confirmation Bight..... 1086
" 21—Schematic diagram of Point Dume..... 1089
" 22—Section along axis of Point Dume..... 1094
" 23—Dume platform exposure..... 1095
" 24—South side of Three-arch Bay, near Laguna..... 1106
" 25—Simplified diagram of the two abrasional levels west of Santa Barbara 1109
" 26—Condensed diagram of marine terraces on the northern coast 1113

FENTON AND FENTON:

Figure 1—Reef or bioherm in the Beltian Siyeh formation..... 1137
" 2—Second bioherm of *Collenia frequens*..... 1140

BARBOUR:

Figure 1—Course of the Yellow River from Kansu to Shantung... 1143
" 2—Field sketch of dissected Sanmenian terrace near Taiku, Shansi 1148
" 3—Terraces of the Yellow River..... 1151

Page

Figure 4—Tungkuan-Lingpoa stretch of the Huangho 1152
" 5—Yellow River section near Hoshan 1153

WESTGATE AND FISCHER:

Figure 1—Index of localities at the Marble Cliff quarries 1164
" 2—Uneven upper surface of the Columbus limestone 1167
" 3—Columbus-Delaware contact in quarry near Marble Cliff station 1169

RICH:

Figure 1—Cumberland Mountain and Cumberland Gap from the Northwest 1220
" 2—Cumberland Gap from the Southeast 1220
" 3—Profile of crest of Cumberland Mountain 1221
" 4—Map of Cumberland Gap district 1222
" 5—Cumberland overthrust block and associated structural features 1223
" 6—Drainage map of the Cumberland Gap district 1224
" 7—Middlesboro Basin 1229
" 8—Profile of Clinch Mountain at Big Moccasin Gap 1232

ANDERSON:

Figure 1—Sketch map of Paskenta-Elder Creek district 1241
" 2—Geologic section along McCarthy Creek 1243

(64 plates; 172 figures)

PUBLICATIONS OF THE GEOLOGICAL SOCIETY OF AMERICA

Regular Publications

The Society issues annually, in six parts, a single serial octavo publication entitled Bulletin of the Geological Society of America, the edition being 1,200 copies. A small supply of authors' separates of the longer articles is kept for sale by the Secretary at the prices quoted in each volume.

The Bulletin is sold at the uniform price of ten dollars ($10.00) per volume, with a discount of twenty-five (25) per cent to Fellows of the Society. A discount of ten (10) per cent is allowed to persons residing elsewhere than in North America and public and institutional libraries; carriage, extra. Subscriptions are payable in advance. Regular subscribers within the United States of America and its possessions receive their parts, postage paid, as issued. Forty (40) cents per volume must be added to the subscription price to cover postage to other countries in the Postal Union.

The price of the index to volumes 1-10 is $2.25; to volumes 11-20, $3.50; to volumes 21-30, $4.00; to volumes 31-40, $4.00; carriage, extra. No reduction is made to dealers. Orders should be addressed to the Secretary, whose address is 419 West 117th Street, New York, N. Y., and drafts and money orders should be made payable to *The Geological Society of America*.

Description of the Published Volumes

Volumes	Pages	Plates	Figures
Vol. 1, 1889	593 + xii	13	51
Vol. 2, 1890	622 + xiv	23	63
Vol. 3, 1891	541 + xi	17	72
Vol. 4, 1892	458 + xi	10	55
Vol. 5, 1893	655 + xii	21	43
Vol. 6, 1894	528 + x	27	40
Vol. 7, 1895	558 + x	24	61
Vol. 8, 1896	446 + x	51	29
Vol. 9, 1897	460 + x	29	49
Vol. 10, 1898	534 + xii	54	83
Index to volumes 1-10	209	..	..
Vol. 11, 1899	651 + xii	58	37
Vol. 12, 1900	538 + xii	45	28
Vol. 13, 1901	583 + xii	58	47
Vol. 14, 1902	609 + xii	65	43
Vol. 15, 1903	636 + x	59	16
Vol. 16, 1904	636 + xii	94	74
Vol. 17, 1905	785 + xiv	84	96
Vol. 18, 1906	717 + xii	74	59
Vol. 19, 1907	617 + x	41	31
Vol. 20, 1908	749 + xiv	111	35
Index to volumes 11-20	422	..	..
Vol. 21, 1909	823 + xvi	54	109
Vol. 22, 1910	747 + xii	31	66

Volumes	Pages	Plates	Figures
Vol. 23, 1911	758 + vi	43	44
Vol. 24, 1912	737 + viii	36	60
Vol. 25, 1913	802 + viii	28	47
Vol. 26, 1914	504 + xxi	27	41
Vol. 27, 1915	739 + xviii	30	55
Vol. 28, 1916	1005 + xxi	48	102
Vol. 29, 1917	679 + xix	22	67
Vol. 30, 1918	644 + xiii	15	40
Index to volumes 21-30	325	..	..
Vol. 31, 1919	450 + xviii	14	7
Vol. 32, 1920	488 + xviii	12	60
Vol. 33, 1921	862 + xxi	5	115
Vol. 34, 1922	748 + xx	12	125
Vol. 35, 1923	896 + xxii	36	95
Vol. 36, 1924	707 + xx	10	118
Vol. 37, 1925	667 + xviii	20	57
Vol. 38, 1926	857 + xxiv	21	153
Vol. 39, 1927	1195 + xxix	31	196
Vol. 40, 1928	822 + xxiv	20	96
Index to volumes 31-40	183	..	..
Vol. 41, 1929	842 + xxv	22	135
Vol. 42, 1930	1025 + xxviii	23	158
Vol. 43, 1931	1083 + xxxii	29	166
Vol. 44, 1932	1289 + xxxii	64	172

Parts of Volume 44

	Pages.	Plates.	Figures.	Price to Fellows.	Price to Public.
Number 1	1-242	...	..	$2.40	$3.60
Number 2	243-460	1-14	5	2.60	3.90
Number 3	461-668	15-18	35	2.20	3.30
Number 4	669-870	...	65	2.00	3.00
Number 5	871-1134	19-56	52	3.80	5.70
Number 6*	1135-1287	57-64	20	1.60	2.40

Brochures of Volume 44

	Pages.	Plates.	Figures.	Price to Fellows.	Price to Public.
Proceedings of the Thirty-first Annual Meeting of the Cordilleran Section of the Geological Society of America, held at Stanford University, California, April 8 and 9, 1932. Ralph W. Chaney, *Secretary*	145-172	....	..	$0.25	$0.40

* Preliminary pages and index are distributed with number 6.

	Pages.	Plates.	Figures.	Price to Fellows.	Price to Public.
Proceedings of a joint session of Section E of the American Association for the Advancement of Science and members of the Geological Society of America, held at Atlantic City, New Jersey, December 27, 1932. Kirtley F. Mather, *Secretary*.	173-180	....	..	0.10	0.15
Proceedings of the Twenty-fourth Annual Meeting of the Paleontological Society, held at Cambridge, Massachusetts, December 28, 29, and 30, 1932. B. F. Howell, *Secretary*†	181-234	....	..	0.50	0.75
Proceedings of the Thirteenth Annual Meeting of the Mineralogical Society of America, held at Cambridge, Massachusetts, December 28, 29, and 30, 1932. F. R. Van Horn, *Secretary*†† ..	235-242	....	..	0.10	0.15
The Depths of the Earth. Reginald A. Daly.....	243-264	....	5	0.20	0.30
Development of invertebrate paleontology in America. R. S. Bassler†	265-286	....	..	0.20	0.30
Classification and Nomenclature of rock units. Joint Committee	423-459	....	..	0.35	0.55
Rôle of analysis in scientific investigation. Douglas Johnson.	461-494	....	1	0.25	0.40
"Catskill" sedimentation in Pennsylvania. Bradford Willard..	495-516	....	2	0.20	0.30
Hydrographic data. Gilbert T. Rude	517-528	....	5	0.10	0.15
Origin of domes in Lincoln and Mitchell counties, Kansas. Kenneth K. Landes and J. W. Ockerman	529-540	....	3	0.10	0.15
Laboratory equipment for geologic instruction. Carey Croneis and G. Frederick Shepherd.....	541-552	15-18	2	0.25	0.40
Chambersburg (Harrisburg) Peneplain in the piedmont of Maryland and Pennsylvania. M. R. Campbell	553-573	....	4	0.20	0.30

	Pages.	Plates.	Figures.	Price to Fellows.	Price to Public.
Palisade Glacier of the High Sierra of California. O. D. von Engeln	575-600	....	11	0.25	0.40
Subsurface Devonian and Silurian sections across northern Pennsylvania and southern New York. Charles R. Fettke	601-660	....	2	0.60	0.90
Lake Atitlan. Wallace W. Atwood	661-668	....	5	0.10	0.15
Eldoran epoch of the Pleistocene Period. George F. Kay and Morris M. Leighton	669-674	....	..	0.10	0.15
New version of the Spokane Flood. Ira S. Allison	675-722	....	24	0.40	0.60
Three Oreodont skeletons from the Lower Miocene of the Great Plains. F. B. Loomis†	723-734	....	9	0.10	0.15
Preliminary generalized Cambrian time scale. Charles Elmer Ressert	735-756	....	..	0.20	0.30
Hamilton group of eastern Pennsylvania. Bradford Willard and A. B. Cleaves†	757-782	....	2	0.25	0.40
Terraces and coulees along the Columbia River near Lake Chelan. A. C. Waters	783-820	....	22	0.40	0.60
Further note on the earliest use of the term "Geology." F. D. Adams	821-826	....	..	0.10	0.15
Present distribution and thickness of Mesozoic systems. W. A. Ver Wiebe	827-864	....	4	0.40	0.60
Angular coal fragments as evidence of a long time break in Pennsylvanian sedimentation in eastern Kansas. J. L. Rich	865-870	....	4	0.10	0.15
Attempt to zone the North American Jurassic on the basis of its brachiopods. C. H. Crickmay	871-894	19-22	..	0.35	0.55
Mount Jura investigation. C. H. Crickmay	895-926	23-34	..	0.70	1.05
Alpine land forms of western United States. R. J. Russell	927-950	....	8	0.25	0.40
Carboniferous tracks from Nova Scotia. C. M. Sternberg†	951-964	35-37	1	0.25	0.40
Late-Pleistocene sequence in the Connecticut Valley. R. F. Flint	965-988	....	3	0.25	0.40

	Pages.	Plates.	Figures.	Price to Fellows.	Price to Public.
Contact metamorphism of the slates of Minnesota by granite and by gabbro magmas. F. F. Grout	989-1040	38-39	14	0.60	0.90
Glacial epochs of the Santa Monica Mountains, California. W. M. Davis	1041-1134	40-56	26	1.45	2.20
Algal reefs or bioherms in the Belt Series of Montana. C. L. Fenton and M. A. Fenton	1135-1142	57	2	0.10	0.15
Pleistocene history of the Huangho. G. B. Barbour	1143-1160	58	5	0.20	0.30
Bone beds and crinoidal sands of the Delaware limestone of central Ohio. L. G. Westgate and R. P. Fischer	1161-1172	..	3	0.10	0.15
Middle Ordovician polychaeta from Minnesota. C. R. Stauffer	1173-1218	59-61	..	0.55	0.85
Physiography and structure at Cumberland Gap. J. L. Rich	1219-1236	..	8	0.20	0.30
Knoxville-Shasta succession in California. F. M. Anderson	1237-1270	62-64	2	0.45	0.70

† Under the brochure heading is printed Proceedings of the Paleontological Society.
†† Under the brochure heading is printed Proceedings of the Mineralogical Society.

Irregular Publications

In the interest of exact bibliography, the Society takes cognizance of all publications issued wholly or in part, under its auspices. Each author of a memoir receives 50 copies without cost, and is permitted to order any additional number at a slight advance on cost of paper and presswork. These reprints are identical with those of the editions issued and distributed by the Society; but the cover bears only the title of the paper, the author's name, and the statement [Reprinted from the Bulletin of the Geological Society of America, vol. —, pp. —, pl. — (Date)]. Contributors to the Proceedings and "Abstracts of Papers" are also authorized to order any number of separate copies of their papers at a slight advance on cost of paper and presswork; but such separates are bibliography distinct from the reprints issued by the Society.

Editions Uniform with the Brochures of the Bulletin

Pages 145-172			60	copies,	February 28, 1933.
" 173-180			60	"	"
" 181-234 *†			310	"	"
" 235-242 ††			60	"	"
" 243-264			600	"	April 30, 1933.
" 265-286 *†			375	"	"
" 423-459			1550	"	"
" 461-494		1 fig.	225	"	June 30, 1933.
" 495-516		2 figs.	100	"	"
" 517-528		5 figs.	75	"	"
" 529-540		3 figs.	225	"	"
" 541-552	plates 15-18	2 figs.	125	"	"
" 553-573		4 figs.	175	"	"
" 575-600		11 figs.	375	"	"
" 601-660		2 figs.	100	"	"
" 661-668		5 figs.	125	"	"
" 669-674			250	"	August 31, 1933.
" 675-722		24 figs.	75	"	"
" 723-734 *†		9 figs.	475	"	"
" 735-756 *†			375	"	"
" 757-782 *†		2 figs.	425	"	"
" 783-820		22 figs.	125	"	"
" 821-826			325	"	"
" 827-864		4 figs.	150	"	"
" 865-870		4 figs.	125	"	"
" 871-894	plates 19-22		75	"	October 31, 1933.
" 895-926	plates 23-34		75	"	"
" 927-950		8 figs.	125	"	"
" 951-964 *†	plates 35-37	1 fig.	375	"	"

* Bearing on the cover,
Proceedings of the Paleontological Society.
[Reprinted from the Bulletin of the Geological Society of America, vol. —, pp. —. (Date).]

† Under the brochure heading is printed Proceedings of the Paleontological Society.
†† Under the brochure heading is printed Proceedings of the Mineralogical Society.

Pages 965-988		3 figs.	75	copies,	October 31, 1933.
" 989-1040	plates 38-39	14 figs.	125	"	"
" 1041-1133	plates 40-56	26 figs.	175	"	"
" 1135-1142	plate 57	2 figs.	425	"	December 31, 1933.
" 1143-1160	plate 58	5 figs.	125	"	"
" 1161-1172		3 figs.	125	"	"
" 1173-1218	plates 59-61		125	"	"
" 1219-1236		8 figs.	175	"	"
" 1237-1270	plates 62-64	2 figs.	125	"	"

Special Editions ‡‡

Pages 35- 40		100	copies,	February 28, 1933.
" 40- 42		100	"	"
" 42- 43		100	"	"
" 50- 57		100	"	"
" 109-122		1200	"	"
" 123-143		1000	"	"
" 288-301	plate 1	75	"	April 30, 1933.
" 301-307	plate 2	75	"	"
" 307-317	plate 3	75	"	"
" 317-325	plate 4	75	"	"
" 325-328	plate 5	75	"	"
" 328-337	plate 6	75	"	"
" 338-347	plate 7	75	"	"
" 347-352	plate 8	75	"	"
" 352-374	plate 9	75	"	"
" 374-377	plate 10	75	"	"
" 377-394	plate 11	75	"	"
" 395-401	plate 12	75	"	"
" 402-413	plate 13	75	"	"
" 414-415	plate 14	50	"	"
" 415-419		50	"	"
" 419-422		50	"	"

CORRECTIONS AND INSERTIONS

Contributors to volume 44 have been invited to send corrections and insertions to be made in their paper, and the volume has been scanned with some care. The following are such corrections and insertions:

Page 23, line 5, *after* "Article VII" *insert* "paragraph 3."

" 23, line 25, *after* "bank statements" *insert* "The receipts from bulletin sales, authors' separates, etc., as recorded in the records of the secretary have also been traced to bank statements."

" 35, line 12 from bottom, *for* "Ezabeth" *read* "Elizabeth."

" 35, line 12 from bottom, *for* "of" *read* "on."

" 49, line 2, *for* "72" *read* "79."

" 108, line 20, *for* "page 108" *read* "page 46."

" 113, line 3, *for* "officer" *read* "officers."

‡‡ Bearing imprint [From BULL. GEOL. SOC. AM., Vol. 44, 1933.]

Page 182, line 13, *for* "Alfred" *read* "Aldred
" 208, first author subhead, *for* "Carey Croneis and Harold W. Scott" *read* "Carey Croneis and Paul Gries."
" 403, line 9, *for* "five" *read* "six."
" 410, delete third reference under "1906."
" 410, under "1908," fourth reference, *for* "pages 50, 51" *read* "pages 51, 52."
" 576, figure caption, *for* "Photo by Carl Allen" *read* "Photo by A. Kelly, D. Durand, and E. C. Rust."
" 583, figure caption, *for* "Photo by T. Rust" *read* "Photo by E. C. Rust."
" 628, line 20, *for* "Saline group" *read* "Salina group."
" 708, transpose figure captions.
" 738, line 7, *for* "Dendrograptus" *read* "Platycolpus."
" 738, line 10, *for* "Irvingella major" *read* "Prosaukia."
" 971, line 9, *for* "colian" *read* "eolian."
" 1008, line 6, *for* "24 hornfelses" *read* "29 hornfelses."
" 1023, lower right-hand corner, *for* "00" *read* symbol for infinity.
" 1025, line 4 from bottom should be bottom line.
" 1043, line 21, *for* "companionably associated" *read* "companionable associates."
" 1056, line 3 from bottom, *for* "Figure 12" *read* "Figure 10."
" 1058, line 10, *for* "Figure 12" *read* "Figure 10."
" 1071, line 7, *for* "covered" *read* "adjoined."
" 1080, line 3 from bottom, *for* "Figure 2" *read* "Figure 20."
" 1083, line 10, *for* "Plate 49" *read* "Plate 42."
" 1084, line 5, *for* "Plate 49, B and C" *read* "Plate 49, A and B."
" 1086, next to last line, *for* "Plate 50, A" *read* "Plate 49, C."
" 1087, line 7 from bottom, *for* "Plate 42, B" *read* "Plate 50, A."
" 1099, line 3 from bottom, *for* "Plate 16A and B" *read* "Plate 55, A."
" 1113, line 4, *for* "1933" *read* "1932."
" 1119, caption B, *for* "page 1087" *read* "page 1083."
" 1126, caption C, *for* "page 1084" *read* "page 1086."
" 1127, caption A, *for* "page 1086" *read* "page 1087."

INDEX TO VOLUME 44

Page

A NEW otter from Later Cenozoic beds, southwestern Idaho 219
ABSTRACTS of Papers 67
ACADEMY of Natural Sciences of Philadelphia, New museum cases of 242
ADAMS, F. D.; Further note on the earliest use of the word "Geology" .34, 67, 821
ADAMS, GEORGE IRVING 31, 288
ADDRESS of the retiring president of the Geological Society 46, 243
——————— Mineralogical Society 46
——————— Paleontological Society 44, 265
ADDRESS of welcome by Donald H. McLaughlin 33
ADDRESSES of welcome 33
AFRICA, Tertiary flora from east-central. 213
AGE of Columbia River and lower canyon. 156
AGE of Meteor Crater, Arizona 156
ALASKA, Aniakchak and Veniaminof volcanoes 35, 90
ALASKA, Fauna of the Yakataga formation of southern 168
—, Oligocene sediments of the Yakataga-Controller Bay region 167
ALBERTA, New turtles from the Belly River formation of 207
ALDRICH, TRUMAN HEMINWAY 31, 301
ALGAL bioherms in the Belt Series of Montana 212
ALGAL reefs or bioherms in the Belt Series of Montana 1135
ALGERIA, Stratigraphy and orogeny of the Dahra Range 64, 69
ALLISON, I. S.; New version of the Spokane flood 675
—; Revision of the Spokane Flood ... 35, 68
ALPINE land forms of western United States 35, 98, 927
ALTERATION of basaltic flows, Endomorphic 162
ALTERNATING layers of lava and glacial till in the rim rocks surrounding Crater Lake 214
AMERICA, Development of invertebrate paleontology in 265
ANALYSIS in scientific investigation, Rôle of 461
ANAUXITE as a secondary mineral in some volcanic rocks of California and Arizona 159
ANCHITHERIINE horses from the *Merychippus* zone, north Coalinga district, California 219
ANDERSON, F. M.; Knoxville-Shasta succession in California 1237
—; Knoxville-Shasta succession in California, and the Later Mesozoic record 64, 68
ANDERSON, R. V.; Stratigraphy and orogeny of the Dahra Range, Algeria 64, 69
ANGULAR coal fragments as evidence of a long time break in Pennsylvanian sedimentation in eastern Kansas ... 865
ANIAKCHAK and Veniaminof volcanoes, Alaska 35, 90
ANNELID jaws from Minnesota, Middle Ordovician 192
ANNUAL dinner of the Cordilleran Section 172
——————— Geological Society 49
ANNUAL Smoker 43
APPALACHIAN drainage, Triassic influences on 35, 94

Page

APPALACHIANS, *Olenellus* zone and its faunas in 191
APPALACHIANS of southern Quebec, Structure and stratigraphy of 48, 79
ARCUATE mountain ranges of Asia, Making of 63, 102
ARENACEOUS foraminifera from the Lower Paleozoic of Oklahoma 193
ARIEL Dam site, Geology of 157
ARIZONA, Anauxite as a secondary mineral in some volcanic rocks of 159
—, Age of Meteor Crater 156
ARKANSAS, Conodonts from the upper and middle Arkansas novaculite at Caddo Gap 211
—, Petrographic study of quicksilver ores and associated minerals from Pike County 158
ASIA, Making of arcuate mountain ranges of 63, 102
ASPHALT deposits, Pleistocene rodent fauna from the Carpinteria 219
ASPHALT Ridge, Discovery of Upper Cretaceous fauna in 64, 103
ATITLAN, Lake 35, 70, 661
ATLANTIC Coast, Recent changes in level along 176
———, Statistical investigations of recent evidences of subsidence along. 174
ATOMIC structure and geometrical constants of Tenorite 239
ATTEMPT to zone North American Jurassic on the basis of its brachiopods 64, 80, 871
ATWOOD, W. W.; Is there tillite in the Triassic of Massachusetts? 49, 70
—; Lake Atitlan 35, 70, 661
ATWOOD, W. W., Jr.; Alternating layers of lava and glacial till in the rim rocks surrounding Crater Lake 214
—; Glaciation of the Park Range, Colorado 49, 70
AUDITOR'S Certificate to the Geological Society 22
AURIFEROUS gravels, Evidence regarding age of 46, 78

BAHAMAS, Borehole in 64, 85
BAIN, H. F.; Memorial of Ulysses Sherman Grant 328
BAKER, C. L.; Memorial of Johan August Udden 402
BARBOUR, G. B.; Pleistocene history of the Huangho 1143
—; Terraces of the Yellow River, China 35, 71
BARITES, Origin of the sand 240
BARTH, T. F. W., and KSANDA, C. J.; Structure of the polymorphic forms of niter 242
BARTLETT Trough, Sierra Maestra of Cuba; part of the northern rim of 48, 101
BASALT, Differentiation in Columbia River 242
—, Segregations from the fractional crystallization of 163
BASALTIC flows, Endomorphic alteration of 162
BASIC igneous rocks of the Roseburg quadrangle, Oregon 60, 107
BASSLER, R. S.; Development of invertebrate paleontology in America 265
BATHOLITH, Certain pegmatite facies of the Wallawa Mountains 160
—, Contact metamorphism of the Onawa 241
—, Longs Peak-Saint Vrain 49, 72

Page

BATHOLITHS and the mother lode, Sierra Nevada 49, 79
BAUER, CLYDE MAX; Geology of the central and southern parts of the Wind River Basin....35, 71
BEACH deposits, Observations on the stratification of.... 171
BEARTOOTH-BIGHORN Region, Geologic Problems of....34, 75, 76
BEARTOOTH Butte, Discovery of a fossiliferous Lower Devonian channel deposit at 197
— —, Lower Devonian flora from..... 213
BEDROCK complex of the Sierra Nevada, west of the southern end of the mother lode.... 149
BEIDELLITE in the Cretaceous clays of New Jersey.... 242
BELLY River formation, New turtles from 207
BELT Series of Montana, Algal bioherms in 212
— — — —, Algal reefs or bioherms in..1135
— — — —, Oboloid brachiopods in..... 190
BENCHLANDS, Piedmont.... 154
BERKELEY Hills, Pliocene sequence in... 151
BERKEY, C. P., Presentation to..... 42
—; Presentation to Joseph Stanley-Brown 36
—; Proceedings of the forty-fifth annual meeting of the Geological Society.. 1
—; Report of the Secretary of the Geological Society.... 10
—; Response by.... 42
BERRY, WILLARD; Range and distribution of the genus *Lepidocyclina* Gümbel. 205
BEVAN, ARTHUR; Geology of the Hot Springs district, Virginia.....63, 72
BIOHERMS in the Belt Series of Montana 212
BIGHORN Region, Geologic Problems of Beartooth 34, 75, 76
BILLINGS, MARLAND, and CLEAVES, A. B.; Silurian and Devonian strata of the Littleton Quadrangle, New Hampshire 196
BLACK River valley, Vermont, Glacial and Recent history of.....49, 81
BLACKSTONE, D. L.; Geological reconnaissance of the Pryor Mountains, Montana 168
BLACKWELDER, Eliot; Age of Meteor Crater, Arizona.... 156
—; Grooving of rock surfaces by sand laden currents.... 167
BLUE Ridge escarpment, Origin of.....35, 87
BODE, F. D.; Anchitheriine horses from the Merychippus zone, north Coalinga district, California..... 219
BONE beds and crinoidal sands of the Delaware limestone of central Ohio 46, 108, 1161
BOOS, M. F., and C. M.; Granites of the Front Range: the Longs Peak-Saint Vrain batholith.....49, 72
— —; "Iron Dike".....49, 73
BOREHOLE in the Bahamas.....64, 85
BOSTON Basin, Relation of drumlins to glacial clay of.....49, 81
BOWEN, N. L., SCHAIRER, J. F., and POSNJAK, E.; System CaO-FeO-SiO_2 .....60, 74
BRACHIOPODA, Evaluation of internal characters in the classification of.. 193
BRACHIOPODS, Attempt to zone North American Jurassic on the basis of 64, 80, 871
—, Oboloid 190

Page

BRIGHAM, ALBERT PERRY.....31, 307
BRINE from the Potsdam of central New York, Unusual.... 192
BROWN, BARNUM; Stratigraphy and fauna of the Fuson-Cloverly formation in Montana, Wyoming, and South Dakota.....48, 74
BROWN, T. C.; Changes in level indicated by marginal terraces and other glacial lake deposits in central Massachusetts 175
—; Glacial lakes and ice movements in Millers River valley, Massachusetts 47, 82
BUCHER, W. H.; Geologic Problems of the Beartooth-Bighorn Region.....34, 75
BUERGER, M. J.; Pyrite-marcasite relation 240
—, and BUTLER, R. D.; Immersion liquids of intermediate refraction.... 239
BURCHARD, E. F.; Memorial of George Irving Adams.... 288
BUTLER, R. D., and BUERGER, M. J.; Immersion liquids of intermediate refraction 239
BUTTE, A new tin-bearing tennantite from 240
BUWALDA, J. P., GUTENBERG, BENO, and WOOD, H. O.; Experiments in testing seismographic methods for determining crustal structure..... 170
BY-LAWS of the Geological Society.43, 44, 111
BUSINESS session, Special..... 43
CADDO Gap, Conodonts from the upper and middle Arkansas novaculite at. 211
CALCIUM carbonate, Physical and chemical characteristics of the sediments of Lake Mendota and a preliminary survey of the microflora with reference to precipitation of.....60, 104
California, Anauxite as a secondary mineral in some volcanic rocks of..... 159
—, Anchitheriine horses from the *Merychippus* zone, north Coalinga district 219
—, Carnivora of the Sespe Oligocene, Las Posas Hills.... 199
—, Carnivora of the Sespe Upper Eocene, Simi Valley region.... 199
—, Cenozoic history of San Gabriel Mountains of.... 166
—, Eocene Llajas formation, Ventura County 217
—, Fusulinids of the McCloud and Nosoni formations of north.... 218
—, Geology and paleontology of a portion of the metropolitan district of Los Angeles.... 148
—, Glacial epochs of the Santa Monica Mountains 1041
—, *Hyaenognathus* from the Late Pliocene of the Coso Mountains..... 218
—, Knoxville-Shasta succession in 64, 68, 1237
—, Miocene foraminifera from Reliz Canyon, Monterey County..... 165
—, Occurrence of monazite in a granodiorite pegmatite in Riverside County. 161
—, Palisade Glacier of the High Sierra of 575
—, Stratigraphic significance of foraminifera from the type San Lorenzo formation 217
—, Structural history of fracture systems at Grass Valley.....48, 88
—, Structural relationships of the coast and continental margin of northern 152
—, Upper Eocene mammals from the Sespe north of Simi Valley..... 158

Page

CALIFORNIA, Upper Oligocene mammalian fauna from the Sespe of the Las Posas Hills 158
CAMBRIAN foraminifera, Upper 191
— oölitic hematite in the Reagan sandstone of Oklahoma 60, 86
— time scale, Preliminary generalized 190, 735
CAMPBELL, IAN; Some inter-relations between phases of alteration and types of rocks in the Tonopah mining district, Nevada 164
CAMPBELL, M. R.; Chambersburg (Harrisburg) Peneplain in the Piedmont of Maryland and Pennsylvania 35, 77, 553
CANYONS off the New England Coast .. 63, 99
CARBONIFEROUS tracks from Nova Scotia 198, 951
CARDIOCARPS, *Megalopteris* and the giant winged 213
CARNEGIEITE solid solutions, Some 240
CARNIVORA of the Sespe Oligocene, Las Posas Hills, California 199
— of the Sespe Upper Eocene, Simi Valley region, California 199
CAROLINAS, Meteorite scars in the 35, 94
CARPINTERIA asphalt deposits, Pleistocene rodent fauna from 219
CASCADES, Peculiar gneisses of a late formation in 240
CASTER, K. E.; Stratigraphic relationships in northwestern Pennsylvania. 202
—; Upper Devonian rocks at Ithaca, New York 201
CATSKILL, HAMILTON 46, 77
CATSKILL sedimentation begins in Pennsylvania 64, 108
"Catskill" sedimentation in Pennsylvania 495
CENOZOIC beds, A new otter from Later .. 219
— history of the San Gabriel Mountains of California 166
CERTAIN features of the volcanic sequence and geomorphology of Mount Rainier 148
— pegmatite facies of the Wallowa Mountains batholith in northeastern Oregon 160
CERTIFICATE of Incorporation of the Geological Society 109
CHADWICK, G. H.; Hamilton Catskill .. 46, 77
—; Upper Devonian of the New York region 177
CHALCOPYRITE, Vein-like masses of pyrrhotite in 240
CHALK, Relation of Coccolithophores to origin of Cretaceous 154
CHAMBERLIN, R. T.; Geologic Problems of the Beartooth-Bighorn Region .. 34, 76
CHAMBERSBURG (Harrisburg) Peneplain in the piedmont of Maryland and Pennsylvania 35, 77, 553
CHANEY, R. W.; Further evidence regarding the age of the auriferous gravels 46, 78
—; Proceedings of the thirty-first annual meeting of the Cordilleran Section .. 145
—; Tertiary flora from east-central Africa 213
CHANGES in level indicated by marginal terraces and other glacial lake deposits in central Massachusetts 175
CHANNEL deposit, Discovery of a fossiliferous Lower Devonian 197
CHELAN, Terraces and coulees along the Columbia River near Lake 783

Page

CHENEY, W. F., Jr.; Statistical investigations of recent evidences of subsidence along the Atlantic coast ... 174
CHINA, Terraces of the Yellow River ... 35, 71
CHROMITE deposits in serpentine, Contact conditions of 166
CLAPP, C. H.; Structure of the Rocky Mountains of northwestern Montana 48, 78
CLARK, B. L.; Fauna of the Yakataga formation of southern Alaska 168
—; Pliocene sequence in the Berkeley Hills 151
CLARK, T. H.; Structure and stratigraphy of the Appalachians of southern Quebec 48, 79
CLASSIFICATION and nomenclature of rock units 423
CLAYS, Beidellite in the Cretaceous 242
CLEAVES, A. B., and BILLINGS, MARLAND; Silurian and Devonian strata of the Littleton Quadrangle, New Hampshire 196
—, and WILLARD, BRADFORD; Hamilton group of eastern Pennsylvania .. 197, 757
CLEAVAGE and parting in quartz 239
CLEVELAND Quadrangle, X-ray study of pyrite or marcasite concretions in the rocks of 239
CLINTON of western New York 194
CLOOS, ERNST; Sierra Nevada batholiths and the mother lode 49, 79
—, and W. D. JOHNSTON, JR.; Structural history of the fracture systems at Grass Valley, California .. 48, 88
CLOVERLY formation in Montana, Wyoming, and South Dakota, Fauna of 48, 74
COAL fragments as evidence of a long time break in Pennsylvania sedimentation, Angular 865
COALINGA district, Anchitheriine horses from the Merychippus zone 219
COAST Ranges, Geologic cross-sections through 155
COCCOLITHOPHORES, Relation to origin of Cretaceous chalk 154
COHEE, G. V., F. P. SHEPARD, and J. R. TREFETHEN; Origin of Georges Bank 35, 100
COLORADO, Glaciation of the Park Range 49, 70
—, Multiple glaciation in the Sawatch Range 210
—, Pegmatites of the Pike's Peak region 240
COLUMBIA River, Age of 156
— —, Glacial features along 150
— —, Terraces and coulees along 783
— — basalt, Differentiation in 242
COLUSITE, a new tin-bearing tennantite from Butte, Montana 240
COMMITTEE on stratigraphic practice, principles, and nomenclature, Report of 46
COMPARISON of two granites 161
COMPLEX diabasic intrusions causing local contact fusion 60, 86
CONNECTICUT Valley, Late-Pleistocene sequence in 48, 85, 965
CONODONTS from fissure fillings in the Niagaran of Illinois 207
— from the upper and middle Arkansas novaculite at Caddo Gap, Arkansas 211
CONTACT conditions of some chromite deposits in serpentine in the Klamath Mountains 166

Page

CONTACT fusion, Complex diabasic intrusions causing local.....60, 86
— metamorphism of the Onawa batholith, Piscataquis County, Maine.... 241
— — — — slates of Minnesota by granite and by gabbro magmas...46, 86, 989
CONTINENTAL shelf off the northeastern United States, Sediments of..... 206
— shelves as dynamic zones: a toggling-shelf orogeny..... 174
CONTROLLER Bay region, Oligocene sediments of..... 167
CONVENIENT method of using refractive index liquids..... 165
COOK, H. J.; Notes on the Tertiary geology of western Nebraska, western South Dakota, eastern Wyoming, and related areas..... 200
COOKE, C. W.; Pleistocene changes of sealevel..... 177
COOMBS, H. A.; Certain features of the volcanic sequence and geomorphology of Mount Rainier..... 148
COOPER, C. L.; Conodonts from the upper and middle Arkansas novaculite at Caddo Gap, Arkansas..... 211
—; Revision of *Ligonodina* Ulrich and Bassler, 1926, and *Prioniodus* Pander, 1856..... 210
COOPER, G. A.; Evaluation of internal characters in the classification of the brachiopoda..... 193
—; Stratigraphy of the Hamilton group of eastern New York..... 200
CORALS, Studies in North American Mississippian..... 212
CORDILLERAN Section, Annual dinner of. 172
— —, Election of officers of..... 147
— —, Memorial of..... 147
— —, Proceedings of the thirty-first annual meeting..... 145
— —, Register of the 1932 meeting of. 172
CORNUCOPIA, Microstructures of the gold quartz veins at..... 167
CORRELATION of the pre-Illinoian drifts of Illinois..... 214
CORRESPONDENTS of the Geological Society..... 124
— — — —, Election of..... 29
— — — Paleontological Society..... 221
— — — — —, Election of..... 188
COSO Mountains, *Hyacnognathus* from the Late Pliocene of..... 218
COULEES along the Columbia River near Lake Chelan, Washington..... 783
COUNCIL of the Geological Society, Report of..... 6
COUNCILORS, Election of..... 45
CRATER Lake, Alternating layers of lava and glacial till in the rim rocks surrounding..... 214
CRETACEOUS chalk, Relation of Coccolithophores to origin of..... 154
— clays, Beidellite in..... 242
— deposits, Zonal distribution and foreign affinities of Turritellas occurring in..... 216
— fauna in the Asphalt Ridge, Discovery of Upper.....64, 103
CRICKMAY, C. H.; Attempt to zone North American Jurassic on the basis of its brachiopods.....64, 80, 871
—; Mount Jura investigation....64, 80, 895
CRINOIDAL sands of the Delaware limestone of central Ohio.....46, 108, 1161
CRONEIS, CAREY, and GRIES, PAUL; Scolecodonts from the Decorah formation of Missouri..... 208

Page

CRONEIS, and POTTER, F. C.; New Mississippian starfish..... 211
—, and SHEPHERD, G. F.; Laboratory equipment for geologic instruction.. 541
—, and SCOTT, H. W.; Scolecodonts.... 207
—, —; Scolecodonts and conodonts from fissure fillings in the Niagaran of Illinois..... 207
CROSBY, I. B.; Glacial and Recent history of the Black River valley, Vermont.49, 81
—; Relation of the drumlins to the glacial clay of the Boston Basin..49, 81
—, and R. J. LOUGEE; Glacial marginal shores and the marine limit in Massachusetts.....47, 82
CRYSTALLIZATION of basalt, Segregation from the fractional..... 163
CRYSTALLOGRAPHIC notes..... 241
CRYSTALLOGRAPHY, Theory of determinants applied in..... 241
—, Use of plane angles in geometrical.. 241
— of emplectite..... 241
CRYSTALS, Helically twisted millerite....242
CUBA, Sierra Maestra of.....48, 101
CUMBERLAND Gap, Notes on the physiography of.....35, 96
— —, Physiography and structure of...1219

DAHRA Range, Stratigraphy and orogeny of.....64, 69
DALY, R. A.; The Depths of the Earth.. 243
—; Presidential address by..... 43
—; Report of the President of the Geological Society..... 6
DAM site, Geology of Ariel..... 157
DARTON, N. H.; Geological map of Texas.....34, 82
DAVIS, W. M.; Glacial epochs of the Santa Monica Mountains, California.....1041
—; Piedmont benchlands..... 154
—; Work of sheetfloods.....35, 83
DECORAH formation, Scolecodonts from the..... 208
DEER Creek intrusive, Structure and alteration of..... 241
DELAWARE limestone, Bone beds and crinoidal sands of.....46, 108, 1161
DEPTHS of the Earth, The..... 243
DESERT mountains of erosion.....48, 89
DETRIMINANTS applied in crystallography, Theory of..... 241
DEVELOPMENT of invertebrate paleontology in America..... 265
DEVICE for sampling heavy minerals... 159
DEVONIAN channel deposit at Beartooth Butte, Discovery of a fossiliferous Lower..... 197
— flora from Beartooth Butte, Lower.. 213
— of the New York region, Upper..... 177
— rocks at Ithaca, Upper..... 201
— sections across northern Pennsylvania and southern New York, Subsurface.....63, 84, 601
— strata of the Littleton Quadrangle, New Hampshire..... 196
DIABASE, Weathering of the Medford..60, 92
DIABASIC intrusions causing local contact fusion.....60, 86
DIFFERENTIATION as expressed by intrusive stocks in the Magdalena district, New Mexico..... 241
— in Columbia River Basalt..... 242
DIKE, Iron.....49, 73
DISCOVERY of a fossiliferous Lower Devonian channel deposit at Beartooth Butte, Wyoming..... 197

Page

DISCOVERY of Upper Cretaceous fauna in the Asphalt Ridge, Utah.....64, 103
— — an Upper Eocene mammalian fauna in southern Saskatchewan... 199
DISSECTED pediments in the Magdalena district, New Mexico.....35, 91
DISSIPATION of the Wisconsin Glacier in Maine.....47, 95
DOMES, Origin of..... 529
DONNAY, J. D. H.; Theory of determinants applied in crystallography.. 241
—, and MELON, J.; Haüy-Bravais lattice and other crystallographic data for sodium molybdo-tellurate..... 239
DORF, ERLING; Discovery of a fossiliferous Lower Devonian channel deposit at Beartooth Butte, Wyoming. 197
—; Lower Devonian flora from Beartooth Butte, Wyoming..... 213
DRAINAGE, Triassic influences on Appalachian 35, 94
DRUMLINS to the glacial clay of the Boston Basin, Relation of.....49, 81
DRYDEN, LINCOLN; Structure of the Tertiary formations of Maryland....49, 83
DUNBAR, C. O.; Report of Treasurer of the Paleontological Society..... 186
DUNN, P. H.; Foraminiferal correlation of the Osgood formation..... 209
—; Scolecodonts from the Silurian Edgewood formation..... 196
DYKES, L. H.; Occurrence of Monazite in a granodiorite pegmatite in Riverside County, California..... 161

EARDLEY, A. J.; Structure and physiography of the southern Wasatch Mountains, Utah.....49, 83
EARLIEST use of the word "Geology." Further note on the.....34, 67, 821
Early Osage Mississippian beds of the Ozark region..... 203
EARTH, The Depths of..... 243
EDGEWOOD formation, Scolecodonts from the Silurian..... 196
EDITOR'S Report to the Geological Society 27
— — — — Mineralogical Society..... 237
ELDORAN epoch of the Pleistocene Period 669
ELECTION of Councilors and Officers.... 45
— — Fellows and Correspondents of the Paleontological Society..... 188
— — officers of the Cordilleran Section. 147
— — — — and fellows of the Mineralogical Society..... 236
— — — — — members of the Paleontological Society..... 187
— — — — of the Pacific Coast Branch of the Paleontological Society..... 216
— — Representative, Correspondents, and Fellows of the Geological Society 29
EMERSON, BENJAMIN KENDALL.....31, 317
EMPLECTITE, Crystallography of..... 241
ENDOMORPHIC alteration of basaltic flows 162
EOCENE, Carnivora of the Sespe Upper.. 199
— Llajas formation, Ventura County, California 217
— mammalian fauna is southern Saskatchewan, Discovery of an Upper. 199
— mammals from the Sespe..... 158
— of southwestern Oregon, Stratigraphy of the marine..... 205
— ungulate, Skull of Patagonian..... 198
EROSION, Desert mountains of.....48, 89
ESCARPMENT, Origin of Blue Ridge...35, 87

Page

EVALUATION of internal characters in the classification of the brachiopoda. 193
EXPERIMENTS in testing seismographic methods for determining crustal structure 170
EXTINCT Lake San Augustin, New Mexico 35, 96

FAIRCHILD, H. L.; Presentation to.... 50
—; Response of..... 53
FAULTS, Thrust.....48, 93
— in the desert range, Rotated.....64, 93
FAUNA in the Asphalt Ridge, Discovery of Upper Cretaceous.....64, 103
— from the Carpinteria asphalt deposits, Pleistocene rodent..... 219
— of the Fuson-Cloverly formation in Montana, Wyoming, and South Dakota 48, 74
— in southern Saskatchewan, Discovery of an Upper Eocene mammalian.... 199
— from the Sespe of the Las Posas Hills, Upper Oligocene mammalian..... 158
— of the Yakataga formation of southern Alaska..... 168
FAUNAL relations of the Keasey formation of the Oligocene of Oregon... 217
FAUNAS, Galena and Platteville..... 209
—, Pennsylvanian and Permian facies.. 205
— in the Appalachians, *Olenellus* zone and 191
FELLOWS of the Geological Society.... 124
— — — — — Election of..... 29
— — — Mineralogical Society, Election of 236
— and members of the Paleontological Society 222
— of the Paleontological Society, Election of..... 188
FENTON, C. L., and M. A.; Algal bioherms in the Belt Series of Montana..... 212
— — —; Algal reefs or bioherms in the Belt Series of Montana.....1135
— — —; Oboloid brachiopods in the Belt Series of Montana..... 190
FETTKE, C. R.; Subsurface Devonian and Silurian sections across northern Pennsylvania and southern New York 63, 84, 601
FIELD, R. M.; Map showing the seismic epicenters, sonic sounding, and gravity stations in the West Indies and contiguous areas.....63, 84
—, and HESS, H. H.; Borehole in the Bahamas 64, 85
FINANCE Committee's Report to the Geological Society..... 23
FISCHER, RICHARD P., and LEWIS G. WESTGATE; Bone beds and crinoidal sands of the Delaware limestone of central Ohio.....46, 108, 1161
FISK, H. N.; Differentiation in Columbia River basalt..... 242
FISSURE fillings, Scolecodonts and conodonts from..... 207
FIVE fold check of Uraninite age..... 240
FLINT, R. F.; Late-Pleistocene sequence in the Connecticut valley....48, 85, 965
FLOOD, New version of the Spokane.... 675
—, Revision of the Spokane.....35, 68
FLORA from Beartooth Butte, Lower Devonian 213
— from east-central Africa, Tertiary... 213
FORAMINIFERA, Upper Cambrian..... 191
— from the Mesozoics of Montana.... 204
— — — Lower Paleozoic of Oklahoma, Arenaceous 193
— — Reliz Canyon, Miocene..... 165

Page

FORAMINIFERA from the type San Lorenzo formation, Stratigraphic significance of 217
FORAMINIFERAL correlation of the Osgood formation 209
FRACTIONAL crystallization of basalt, Segregations from 163
FRACTURE systems at Grass Valley, California, Structural history of 48, 88
FRIZZEL, D. L.; Relation of Coccolithophores to the origin of Cretaceous chalk 154
FRONT Range, Granites of 49, 72
FULLER, R. E.; Complex diabasic intrusions causing local contact fusion .60, 86
—; Endomorphic alteration of basaltic flows 162
—; Segregations from the fractional crystallization of basalt 163
FURLONG, E. L.; A new otter from Later Cenozoic beds, southwestern Idaho. 219
FURTHER evidence regarding the age of the auriferous gravels 46, 78
— note on the earliest use of the word "Geology" 34, 67, 821
FUSION, Complex diabasic intrusions causing local contact 60, 86
FUSON-CLOVERLY formation in Montana, Wyoming and South Dakota, Fauna of 48, 74
FUSULINIDS of the McCloud and Nosoni formations of north California 218

GABBRO magma, Contact metamorphism of the slates of Minnesota by .46, 86, 989
GALENA and Platteville faunas in northwestern Illinois 209
GARDNER, JULIA; Memorial of Truman Heminway Aldrich 301
GASPÉ, Silurian stromatoporoids of 195
GEOLOGIC cross-sections through the coast ranges immediately north of San Francisco Bay 155
— problems of the Beartooth-Bighorn Region 34, 75, 76
GEOLOGICAL map of Texas 34, 82
— reconnaissance of the Pryor Mountains, Montana 168
— Society, Abstracts of papers 67
— —, Annual dinner of 49
— —, By-Laws 111
— —, Certificate of Incorporation 109
— —, Correspondents of 124
— —, Fellows of 124
— —, Memorials of 287
— —, Officers of 123
— —, Proceedings of forty-fifth annual meeting of 1
— —, Proceedings of joint session of Section E and 173
— —, Register of the Cambridge Meeting 65
— —, Resolution of thanks adopted by. 64
GEOLOGY, Further note on the earliest use of the word 34, 67, 821
— of Ariel Dam site 157
— — the Hot Springs district, Virginia 63, 72
— — — central and southern parts of the Wind River Basin 35, 71
— and paleontology of a portion of the metropolitan district of Los Angeles, California 148
GEOMORPHOLOGY, Rock resistance and interfluvial degradation as dominant factors in 64, 97
— of Mount Rainier, Certain features of. 148
GEORGES Bank, Origin of 35, 100
GILL, ADAM CAPEN 32, 325

Page

GLACIAL clay of the Boston Basin, Relation of drumlins to 49, 81
— epochs of the Santa Monica Mountains, California 1041
— features along Columbia River near Lake Chelan 150
— and Recent history of the Black River valley, Vermont 49, 81
— lakes and ice movements in Millers River valley, Massachusetts 47, 82
— marginal shores and the marine limit in Massachusetts 47, 82
— melting, Is present tilting in North America due to 152
— till in the rim rocks surrounding Crater Lake, Alternating layers of lava and 214
GLACIATION of the Park Range, Colorado 49, 70
— in the Sawatch Range, Multiple 210
— — — southern part of central Siberia, Traces of Proterozoic 49, 102
GLACIER, Wisconsin 47, 95
— of the High Sierra of California, Palisade 575
GNEISSES of a late formation in the Cascades, Peculiar 240
GOLD quartz veins, Microstructures of .. 167
GOODSPEED, G. E.; Certain pegmatite facies of the Wallowa Mountains batholith in northeastern Oregon .. 160
—; Microstructures of the gold quartz veins at Cornucopia, Oregon 167
GORDON, S. G.; New museum cases of the Academy of Natural Sciences of Philadelphia 242
GRANITE magma, Contact metamorphism of the slates of Minnesota by ..46, 86, 989
— of the Wachusett-Coldbrook Tunnel, Origin of 60, 92
GRANITES, Comparison of two 161
—, Orogeny of Maine 48, 89
— of the Front Range; the Longs Peak-Saint Vrain batholith 49, 72
GRANODIORITE pegmatite, Occurrence of Monazite in a 161
GRANT, ULYSSES SHERMAN 32, 328
GRANT, U. S., IV; Notes on *Scarlesia* ... 220
—, and SOPER, E. K.; Geology and paleontology of a portion of the metropolitan district of Los Angeles, California 148
GRASS Valley, Structural history of fracture systems at 48, 88
GRAVELS, Auriferous 46, 78
—, Pleistocene 48, 88
GRAVITY stations in the West Indies and contiguous areas, Map showing .. 63, 84
GREAT Plains, Three oreodont skeletons from the Lower Miocene of 723
GREGORY, JOHN WALTER 32, 414
GRIES, PAUL, and CRONEIS, CAREY; Scolecodonts from the Decorah formation of Missouri 208
GROOVING of rock surfaces by sand laden currents 167
GROUT, F. F.; Contact metamorphism of the slates of Minnesota by granite and by gabbro magmas 46, 86, 989
GROVE, BRANDON; Studies in North American Mississippian corals 212
GUTENBERG, BENO; Is present tilting in North America due to glacial melting 152
—, WOOD, H. O., and BUWALDA, J. P.; Experiments testing seismographic methods for determining crustal structure 170

Page

HAMILTON CATSKILL....46, 77
HAMILTON group of eastern Pennsylvania 197, 757
——— eastern New York, Stratigraphy of 200
HAMILTON-Traverse ostracode correlations 197
HARRIS, G. D.; Memorial of Adam Capen Gill 325
HARRISBURG peneplain in the piedmont of Maryland and Pennsylvania 35, 77, 553
HAÜY-BRAVAIS lattice and other crystallographic data for sodium molybdotellurate 239
HAWKINS, A. C.; Beidellite in the Cretaceous clays of New Jersey.... 242
—; Helically twisted millerite crystals.. 242
HAWORTH, ERASMUS....32, 338
HAYES, A. O.; Cambrian oölitic hematite in the Reagan sandstone of Oklahoma 60, 86
HELICALLY twisted millerite crystals... 242
HEMATITE in the Reagan sandstone of Oklahoma, Cambrian oölitic....60, 86
HESS, H. H., and FIELD, R. M.; Borehole in the Bahamas....64, 85
HOBSON, H. D.; Stratigraphic significance of foraminifera from the type San Lorenzo formation, California. 217
HODGE, E. T.; Age of Columbia River and lower canyon.... 156
—; New evidence on the age of the John Day formation.... 220
HOLLAND, WILLIAM JACOB....32, 347
HOT SPRINGS district, Virginia, Geology of 63, 72
HOTCHKISS, Presentation address (Penrose Medal) by.... 57
HOWE, ERNEST (death notice).... 32
HOWELL, B. F.; Proceedings of the twenty-fourth annual meeting of the Paleontological Society, held at Cambridge, Massachusetts, December 28, 29, and 30, 1932.... 181
—; Report of Secretary of the Paleontological Society.... 184
—, and RESSER, C. E.: *Olenellus* zone and its faunas in the Appalachians. 191
—, and SANDIDGE, J. R.; Upper Cambrian foraminifera.... 191
HUANGHO, Pleistocene history of....1143
HUMID regions, Rain-wash profiles of.. 154
HUNT, W. F.; Report of the Editor of the Mineralogical Society.... 237
Hyaenognathus from the Late Pliocene of the Coso Mountains, California. 218
HYDROGRAPHIC data and their evaluation 35, 97, 517

ICE movements in Millers River valley, Massachusetts 47, 82
IDAHO, A new otter from Later Cenozoic beds, southwestern.... 219
IDDINGS, JOSEPH PAXTON.... 352
IGNEOUS complex, Stillwater.... 241
— rocks of the Roseburg Quadrangle, Oregon 60, 107
ILLINOIS, Correlation of the pre-Illinoian drifts of.... 214
—, Galena and Platteville faunas in northwestern 209
—, Scolecodonts from the Upper Richmond of.... 208
—, Scolecodonts and conodonts from fissure fillings in the Niagaran of.. 207
IMMERSION liquids of intermediate refraction 239

Page

INSTRUCTION, Laboratory equipment for geologic 541
INTERFLUVIAL degradation as dominant factor in geomorphology....64, 97
INTERNATIONAL Geological Congress, Report of committee on cooperation with 238
INTRUSIONS causing local contact fusion, Complex diabasic....60, 86
INTRUSIVE, Structure and alteration of the Deer Creek.... 241
INVERTEBRATE paleontology in America, Development of.... 265
INVESTIGATION, Rôle of analysis in scientific 461
IOWA, Pleistocene gravels of....48, 88
"IRON DIKE"....49, 73
Is there tillite in the Triassic of Massachusetts?....49, 70
Is present tilting in North America due to glacial melting?.... 152
ITHACA, Upper Devonian rocks at..... 201

JAWS, Middle Ordovician annelid..... 192
JOHANNSENITE, a new manganese pyroxene 240
JOHN DAY formation, New evidence on the age of.... 220
JOHNSON, DOUGLAS; Origin of the Blue Ridge escarpment....35, 87
—; Rôle of analysis in scientific investigation 461
JOHNSTON, W. D., JR., and ERNST CLOOS; Structural history of the fracture systems at Grass Valley, California 48, 88
JONES, J CLAUDE....32, 374
JURASSIC, Attempt to zone North American 64, 80, 871

KANSAS, Angular coal fragments as evidence of long time break in Pennsylvanian sedimentation in eastern. 865
—, Origin of domes in Lincoln and Mitchell counties.... 529
KAY, G. M.: Ordovician Trenton group in New York: Stratigraphy of the lower and upper limestone formations 193
KAY, G. F., and LEIGHTON, M. M.; Eldoran epoch of the Pleistocene Period 669
—, —P. T. MILLER; Pleistocene gravels of Iowa....48, 88
KEASEY formation, Stratigraphic and faunal relations of.... 217
KEITH, ARTHUR; Memorial of Albert Perry Brigham.... 307
—; Orogeny of Maine granites.....48, 89
KELLY, W. A.; Pennsylvanian mollusca from Michigan.... 204
KERR, P. F.; Tungsten deposit at Mill City, Nevada.... 240
KEYES, CHARLES; Desert mountains of erosion 48, 89
KIAER, JOHAN....32, 415
KING, P. H.; Permian stratigraphy in trans-Pecos Texas....64, 90
KLAMATH Mountains, Contact conditions of some chromite deposits in serpentine in.... 166
KLEINPELL, R. M.; Miocene foraminifera from Reliz Canyon, Monterey County, California.... 165
KNAPPEN, R. S.; Aniakchak and Veniaminof volcanoes, Alaska.....35, 90
KNOXVILLE-Shasta succession in California and the Later Mesozoic record 64, 68, 1237

Page

KOSCHMANN, A. H.; Differentiation as expressed by intrusive stocks in the Magdalena district, New Mexico... 241
—, and G. F. LOUGHLIN; Dissected pediments in the Magdalena district, New Mexico.....35, 91
KRIEGER, PHILIP; Occurrence of Strontianite at Sierra Mojada, Mexico.. 240
KSANDA, C. J., and BARTH, T. F. W.; Structure of the polymorphic forms of niter..... 242
—, TUNELL, GEORGE, and POSNJAK, E.; Atomic structure and geometrical constants of Tenorite..... 239
KUMMEL, H. B.; New Jersey Coast—the two feet per century subsidence myth 178
KUNZ, GEORGE FREDERICK.....32, 377

LABORATORY equipment for geologic instruction 541
LAFORGE, LAURENCE, and PALACHE, CHARLES; Crystallographic notes.. 241
LAKE Atitlan.....35, 70, 661
— Chelan, Glacial features along Columbia River near..... 150
— —, Terraces and coulees along the Columbia River near..... 783
— deposits, Changes in level indicated by 175
— Mendota, Physical and chemical characteristics of sediments of.....60, 104
— San Augustin, Extinct.....35, 96
LAKES, Glacial.....47, 82
LAND movements and sedimentation.... 169
LANDES, K. K., and OCKERMAN, J. W.; Origin of domes in Lincoln and Mitchell counties, Kansas..... 529
LANDON, R. E.; Colusite, a new tin-bearing tennantite from Butte, Montana 240
LANE, A. C.; Five fold check of Uraninite age..... 240
—; Presentation to Edward B. Mathews 40
—, and WOLF, A.; Weathering of the Medford Diabase.....60, 92
LARSEN, E. S., and MORRIS, F. K.; Origin of the schists and granite of the Wachusett-Coldbrook Tunnel, Massachusetts 60, 92
LOS POSAS Hills, Carnivora of the Sespe Oligocene 199
— — —, Upper Oligocene mammalian fauna from the Sespe of..... 158
LATE Mesozoic and early Tertiary in Patagonia 63, 100
LATE-Pleistocene sequence in the Connecticut Valley.....48, 85, 965
LATTICE, Hally-Bravais..... 239
LAVA and glacial till in the rim rocks surrounding Crater Lake, Alternating layers..... 214
LAWSON, A. C.; Rain-wash profiles of humid regions..... 154
LEIGHTON, HENRY; Memorial of William Jacob Holland..... 347
LEIGHTON, M. M., and KAY, G. F.; Eldoran epoch of the Pleistocene period 669
LEONARD, ARTHUR GRAY..... 395
Lepidocyclina Gümbel, Range and distribution of the genus..... 205
Ligonodina Ulrich and Bassler, Revision of..... 210
LIMESTONE, Bone beds and crinoidal sands of Delaware.....46, 108, 1161
LITTLETON Quadrangle, Silurian and Devonian strata of..... 196

Page

LLAJAS formation, Eocene..... 217
LONGS Peak—Saint Vrain batholith...49, 72
LONGWELL, C. R.; Memorial tribute to John Walter Gregory..... 414
—; Report on Division of Geology and Geography of National Research Council 60
—; Rotated faults in the desert range, southern Nevada.....64, 93
—; Thrust faults of peculiar type....48, 93
LOOMIS, F. B.; Memorial of Benjamin Kendall Emerson..... 317
—; Skeletons of three oreodonts..... 199
—; Three oreodont skeletons from the Lower Miocene of the Great Plains. 723
LOS ANGELES, Geology and paleontology of a portion of the metropolitan district of..... 148
LOUDERBACK, G. D.; Memorial of J Claude Jones..... 374
LOUGEE, R. J., and I. B. CROSBY; Glacial marginal shores and the marine limit in Massachusetts.....47, 82
LOUGHLIN, G. F., and A. H. KOSCHMANN; Dissected pediments in the Magdalena district, New Mexico..35, 91
LOWER Devonian flora from Beartooth Butte, Wyoming..... 213

MAGDALENA district, Differentiation as expressed by intrusive stocks in... 241
— —, Dissected pediments in.....35, 91
MAGMAS, Contact metamorphism of slates of Minnesota by granite and by gabbro.....48, 86, 989
MACCLINTOCK, PAUL; Correlation of the pre-Illinoian drifts of Illinois..... 214
MCCLOUD formation, Fusulinids of..... 218
MCCOY, ELIZABETH, TWENHOFEL, W. H., and WILLIAMS, F. T.; Physical and chemical characteristics of the sediments of Lake Mendota, a freshwater lake of Wisconsin, and a preliminary survey of the microflora with special reference to the precipitation of calcium carbonate..60, 104
MCLAUGHLIN, D. G.; Note on the thickness and structure of the Triassic series in Pennsylvania..... 178
MCLAUGHLIN, D. H.; Address of welcome 33
MCMASTERS, J. H.; Eocene Llajas formation, Ventura County, California.. 217
MAINE, contact metamorphism of the Onawa batholith, Piscataquis County 241
—, Dissipation of the Wisconsin Glacier in 47, 95
— granites, Orogeny of.....48, 89
MAKING of arcuate mountain ranges of Asia 63, 102
MAMMALIAN fauna in southern Saskatchewan, Discovery of an Upper Eocene 199
— — from the Sespe of the Las Posas Hills, Upper Oligocene..... 158
MAMMALS from the Sespe, Upper Eocene. 158
MANGANESE pyroxene, Johannsenite a new 240
MAP showing the seismic epicenters, sonic sounding, and gravity stations in the West Indies and contiguous areas 63, 84
— of Texas, Geological.....34, 82
MARCASITE concretions in the rocks of the Cleveland quadrangle, X-ray study of..... 239
MARCASITE-pyrite relation..... 240

Page

MARGINAL terraces, Changes in level indicated by 175
MARINE Eocene of southwestern Oregon, Stratigraphy of 205
— limit in Massachusetts 47, 82
MARYLAND, Chambersburg (Harrisburg) Peneplain in piedmont of 35, 77, 553
—, Structure of Tertiary formations of 49, 83
MARMER, H. A.; On the determination of mean sealevel 176
MASSACHUSETTS, Changes in level indicated by marginal terraces and other glacial lake deposits in central 175
—, Glacial lakes and ice movements in Millers River valley 47, 82
—, — marginal shores and the marine limit in 47, 82
—, Origin of schists and granite of the Wachusett-Coldbrook Tunnel 60, 92
—, Is there tillite in the Triassic of 49, 70
MASTODON, RICHMOND 200
MATHER, K. F.; Proceedings of a joint session of Section E of the American Association for the Advancement of Science and members of the Geological Society of America, held at Atlantic City, New Jersey, December 27, 1932 173
MATHEWS, E. B.; Memorial of Joseph Paxton Iddings 352
—, Presentation to 40
—; Report of the Treasurer of the Geological Society 15
—; Response of 41
MAXSON, J. H.; Contact conditions of some chromite deposits in serpentine in the Klamath Mountains 166
—; Structural relationships of the coast and continental margin of northern California 152
MEAN sealevel, On the determination of 176
MEDFORD Diabase, Weathering of 60, 92
Megalopteris and the giant winged cardiocarps 213
MELON, J., and DONNAY, J. D. H.; Haüy-Bravais lattice and other crystallographic data for sodium molybdotellurate 239
MELTON, F. A., and WILLIAM SCHRIEVER; Meteorite scars in the Carolinas 35, 94
MEMBERS of the Paleontological Society, Election of 187
MEMORIAL of the Cordilleran Section 147
— — — — Mineralogical Society 239
MEMORIALS of the Geological Society 287
— — — — Paleontological Society 189
MERRIAM, C. W.; Zonal distribution and foreign affinities of Turritellas occurring in Cretaceous, Tertiary, and Quaternary deposits on the Pacific Coast of North America 216
Merychippus zone, Anchitheriine horses from the 219
MESOZOIC of Montana, Foraminifera from 204
— in Patagonia, Late 63, 100
— record, Knoxville-Shasta succession in California and the later 64, 68
— systems, Present distribution and thickness of 64, 106, 827
METAMORPHISM, Contact 46, 86
— of the Onawa batholith, Contact 241
— of slates, Contact 989
METEOR Crater, Age of 156
METEORITE scars in the Carolinas 35, 94
MEXICO, Occurrence of strontianite at Sierra Mojada 240

Page

MEYERHOFF, H. A., and E. W. OLMSTED; Triassic influences on Appalachian drainage 35, 94
MICHIGAN, Pennsylvanian mollusca from 204
MICROFLORA, Physical and chemical characteristics of sediments of Lake Mendota and a preliminary survey of the 60, 104
MICROSCOPE, New objective for the petrographic 239
MICROSTRUCTURES of the gold quartz veins at Cornucopia, Oregon 167
MID-CONTINENT region, Stratigraphic classification of Pennsylvanian and Permian beds in 46, 95
MIDDLE Ordovician annelid jaws from Minnesota 192
— — polychæta from Minnesota 1173
MILL CITY, Tungsten deposit at 240
MILLER, P. T. and G. F. KAY; Pleistocene gravels of Iowa 48, 88
MILLER, W. J.; Cenozoic history of the San Gabriel Mountains of California 166
—; Comparison of two granites 161
MILLERITE crystals, Helically twisted 242
MILLERS River valley, Massachusetts, Glacial lakes and ice movements in 47, 82
MINERALIZATION, Silver-lead tungsten 64, 103
MINERALOGICAL Society, Address of retiring president 46
— —, Election of officers and fellows 236
— —, Memorial of 239
— —, Proceedings of thirteenth annual meeting 235
— —, Report of the Editor 237
— —, Report of the Secretary 236
— —, Report of the Treasurer 237
— —, Vote of thanks 242
MINERALS, Device for sampling heavy 159
MINNESOTA, Contact metamorphism of slates of 46, 86, 989
—, Middle Ordovician annelid jaws from 192
—, Middle Ordovician polychæta from 173
MIOCENE, Three oreodont skeletons from the Lower 723
— foraminifera from Reliz Canyon, Monterey County, California 165
MISSISSIPPIAN beds of the Ozark region, Early Osage 203
— corals, Studies in North American 212
— starfish, New 211
MISSOURI, Scolecodonts from the Decorah formation of 208
—, Silver-lead tungsten mineralization at Silver Mine 64, 103
MOLLUSCA from Michigan, Pennsylvanian 204
MONAZITE in a granodiorite pegmatite, Occurrence of 161
MONTANA, Algal bioherms in the Belt Series of 212
—, — reefs or bioherms in the Belt Series of 1135
—, Fauna of Fuson-Cloverly formation of 48, 74
—, Foraminifera from the Mesozoics of 204
—, Geological reconnaissance of the Pryor Mountains 168
—, Oboloid brachiopods in the Belt Series of 190
—, Stillwater igneous complex 241
—, Structure of the Rocky Mountains of northwestern 48, 78
—, A new tin-bearing tennantite from Butte 240
MOORE, R. C.; Early Osage Mississippian beds of the Ozark region 203
—; Memorial of Erasmus Haworth 338

Page

MOORE, R. C.; Pennsylvanian and Permian facies faunas..... 205
—; Stratigraphic classification of Pennsylvania and Permian beds in the Mid-Continent region.....46, 95
MOREMAN, W. L.; Arenaceous foraminifera from the Lower Paleozoic of Oklahoma 193
MORRIS, F. K., and LARSEN, E. S.; Origin of the schists and granite of the Wachusett-Coldbrook Tunnel, Massachusetts 60, 92
MOTHER lode, Bedrock complex of Sierra Nevada west of southern end of.... 149
——, Sierra Nevada batholiths and the 49, 79
MOUNT JURA investigation.....64, 80, 895
MOUNT RAINIER, Certain features of the volcanic sequence and geomorphology of..... 148
MOUNT UNION, Silurian sections near.64, 101
MOUNTAIN Ranges of Asia, Making of arcuate 63, 102
MULTIPLE glaciation in the Sawatch Range, Colorado..... 210

NATIONAL Research Council, Report on Division of Geology and Geography. 60
————, Report of the Representative of the Mineralogical Society..... 238
NEBRASKA, Notes on the Tertiary geology of western..... 200
NECROLOGY 31
NEVADA, Rotated faults in the desert range, southern.....64, 93
—, Some inter-relations between phases of alteration and types of rocks in the Tonopah mining district..... 164
—, Tungsten deposit at Mill City..... 240
NEW By-laws adopted..... 44
NEW ENGLAND Coast, Canyons off the.63, 99
NEW evidence on the age of the John Day formation..... 220
NEW HAMPSHIRE, Silurian and Devonian strata of the Littleton Quadrangle. 196
NEW JERSEY, Beidellite in the Cretaceous clays of..... 242
—— Coast—the two feet per century subsidence myth..... 178
NEW MEXICO, Differentiation as expressed by intrusive stocks in the Magdalena district..... 241
——, Extinct Lake San Augustin.....35, 96
——, Dissected pediments in the Magdalena district.....35, 91
NEW Mississippian starfish..... 211
— museum cases of the Academy of Natural Sciences of Philadelphia.. 242
— objective for the petrographic microscope 239
— turtles from the Belly River formation of Alberta..... 207
— version of the Spokane flood..... 675
NEW YORK, Clinton of western..... 194
——, Ordovician Trenton group in..... 193
——, Rôle of proglacial waterfalls in the valley development of central.35, 106
——, Stratigraphy of Hamilton group of eastern..... 200
——, Subsurface Devonian and Silurian sections across southern....63, 84, 601
——, Unusual brine from the Potsdam of central..... 192
——, Upper Devonian rocks at Ithaca.. 201
—— region, Upper Devonian of..... 177
NIAGARAN of Illinois, Scolecodonts and conodonts from fissure fillings in.. 207
NITER, Structure of the polymorphic forms of..... 242

Page

NOMENCLATURE and classification of minerals, Report of the new committee on..... 238
— of rock units, Classification and.... 423
NORTH AMERICA, Is present tilting due to glacial melting..... 152
——, Zonal distribution and foreign affinities of Turritellas occurring in Cretaceous, Tertiary, and Quaternary deposits on the Pacific Coast of 216
NORTH AMERICAN Jurassic, Attempt to zone 64, 80, 871
—— Mississippian corals, Studies in.. 212
NOSONI formation, Fusulinids of..... 218
NOTE on the thickness and structure of the Triassic series in Pennsylvania. 178
NOTES on the physiography of Cumberland Gap.....35, 96
— on *Scarlesia*..... 220
— on the Tertiary geology of western Nebraska, western South Dakota, eastern Wyoming, and related areas 200
NOVA SCOTIA, Carboniferous tracks from 198, 951
NOVACULITE at Caddo Gap, Conodonts from the upper and middle Arkansas 211

OBOLOID brachiopods in the Belt Series of Montana..... 190
OBSERVATIONS on the stratification of beach deposits..... 171
OCCURRENCE of Monazite in a granodiorite pegmatite in Riverside County, California..... 161
—— Strontianite at Sierra Mojada, Mexico 240
OCKERMAN, J. W., and LANDES, K. K.; Origin of domes in Lincoln and Mitchell counties, Kansas..... 529
OFFICERS of the Geological Society..... 123
—, Election of..... 45
— of the Mineralogical Society, Election of 236
———— Paleontological Society, Election of 187
———— Pacific Coast Branch of the Paleontological Society, Election of 216
—, correspondents, fellows, and members of the Paleontological Society..... 221
OHIO, Bone beds and crinoidal sands of Delaware limestone of.....46, 108, 1161
—, X-ray study of pyrite or marcasite concretions in the rocks of the Cleveland Quadrangle..... 239
OKLAHOMA, Arenaceous foraminifera from the Lower Paleozoic of..... 193
—, Cambrian oölitic hematite in the Reagan sandstone of.....60, 86
—, Origin of the sand barites of the Lower Permian of..... 240
—, Simpson Group of.....34, 105
Olenellus zone and its faunas in the Appalachians 191
OLIGOCENE, Carnivora of the Sespe..... 199
—, Stratigraphic and faunal relations of the Keasey formation of..... 217
— mammalian fauna from the Sespe of the Las Posas Hills, Upper..... 158
— sediments of the Yakataga-Controller Bay region, Alaska..... 167
OLMSTED, E. W., and H. A. MEYERHOFF; Triassic influences on Appalachian drainage 35, 94
ON the determination of mean sealevel.. 176
ONAWA batholith, Contact metamorphism of 241
OÖLITIC hematite in the Reagan sandstone of Oklahoma.....60, 86

Page

OPTICS, Symbols of crystal..... 239
ORDOVICIAN annelid jaws from Minnesota, Middle..... 192
— polychæta from Minnesota, Middle..1173
— Trenton group in New York; Stratigraphy of the lower and upper limestone formations..... 193
OREGON, Basic igneous rocks of the Roseburg Quadrangle.....60, 107
—, Microstructures of the gold quartz veins at Cornucopia..... 167
—, Certain pegmatite facies of the Wallowa Mountains batholith in northeastern 160
—, Stratigraphy of the marine Eocene of southwestern 205
—, Stratigraphic and faunal relations of the Keasey formation of the Oligocene of..... 217
OREODONT skeletons from the Lower Miocene of the Great Plains, Three. 723
OREODONTS, Skeletons of three..... 199
ORES, Petrographic study of quicksilver. 158
—, Relation between silver content and tetrahedrite in..... 160
ORIGIN of Georges Bank.....35, 100
— — the Blue Ridge escarpment.....35, 87
— — domes in Lincoln and Mitchell counties, Kansas..... 529
— — the Pliares Pipe..... 163
— — — sand barites of the Lower Permian of Oklahoma..... 240
— — — schists and granite of the Wachusett-Coldbrook Tunnel, Massachusetts 60, 92
OROGENY of the Dahra Range, Algeria.64, 69
— — Maine granites.....48, 89
—, Toggling-shelf 174
OSAGE Mississippian beds of the Ozark region, Early..... 203
OSGOOD formation, Foraminiferal correlation of..... 209
OSTRACODE correlations, Traverse-Hamilton 197
OTTER from Later Cenozoic beds, A new. 219
OTTO, G. H.; Device for sampling heavy minerals 159
OVER, EDWIN, JR., and PALACHE, CHARLES; Pegmatites of the Pike's Peak region, Colorado..... 240
OZARK region, Early Osage Mississippian beds of..... 203

PACIFIC Coast, Zonal distribution and foreign affinities of Turritella occurring in Cretaceous, Tertiary, and Quarternary deposits on..... 216
— — Branch of the Paleontological Society, Election of officers of..... 216
— — — — — — —, Minutes of meeting 216
PALACHE, CHARLES, and LAFORGE, LAURENCE; Crystallographic notes..... 241
—, and OVER, EDWIN, JR.; Pegmatites of the Pike's Peak region, Colorado 240
PALISADE Glacier of the High Sierra of California 575
PALEONTOLOGICAL Society, Address of retiring president..... 44
— —, Correspondents of..... 221
— —, Election of Fellows and Correspondents 188
— —, Election of officers and members of 187
— —, Election of officers of Pacific Coast Branch 216
— —, Fellows and members..... 222
— —, Memorials of..... 189
— —, Officers of..... 221

Page

PALEONTOLOGICAL Society, Minutes of meeting of the Pacific Coast Branch. 216
— —, Proceedings of Twenty-fourth annual meeting of..... 181
— —, Register of the Cambridge meeting 215
— —, Report of Council of..... 184
— —, — — Secretary 184
— —, — — the Service Committee..... 189
— —, — — Treasurer 186
— —, Vote of thanks..... 215
PALEONTOLOGY in America, Development of invertebrate..... 265
— of a portion of the metropolitan district of Los Angeles..... 148
PALEOZOIC of Oklahoma, Arenaceous foraminifera from the Lower..... 193
— time, Sargasso-Seas in.....64, 98
PARK Range, Glaciation of.....49, 70
PARKS, W. A.; Silurian stromatoporoids of Gaspé, Quebec..... 195
—; New turtles from the Belly River formation of Alberta..... 207
PATAGONIA, Late Mesozoic and Early Tertiary in.....63, 100
PATAGONIAN Eocene ungulate, Skull of.. 198
PEACOCK, M. A.; Crystallography of emplectite 241
PECULIAR gneisses of a late formation in the Cascades, Washington..... 240
PEDIMENTS in the Magdelena district, Dissected 35, 91
PEGMATITE, Occurrence of monazite in a granodiorite 161
— facies of the Wallowa Mountains batholith 160
PEGMATITES of the Pike's Peak region, Colorado 240
PENEPLAIN, Chambersburg (Harrisburg). 553
PENNSYLVANIA, "Catskill" sedimentation in.....64, 108, 495
—, Chambersburg (Harrisburg) Peneplain in piedmont of.....35, 77, 553
—, Hamilton group of eastern.....197, 757
—, Silurian sections near Mount Union 64, 101
—, Stratigraphic relationships in northwestern 202
—, Subsurface Devonian and Silurian sections across northern....63, 84, 601
—, Thickness and structure of Triassic series in..... 178
PENNSYLVANIAN beds, Stratigraphic classification of.....46, 95
— mollusca from Michigan..... 204
— and Permian facies faunas..... 205
— sedimentation, Angular coal fragments as evidence of long time break in..... 865
PENROSE Medal, Presentation to E. O. Ulrich 57
PEOPLES, J. W.; Stillwater igneous complex, Montana..... 241
PERKINS, E. H.; Dissipation of the Wisconsin Glacier in Maine.....47, 95
PERMIAN, Origin of the sand barites of the Lower..... 240
— beds, Stratigraphic classification of 46, 95
— facies faunas..... 205
— stratigraphy in trans-Pecos, Texas 64, 90
PETROGRAPHIC study of quicksilver ores and associated minerals from Pike County, Arkansas..... 158
PHILBRICK, S. S.; Contact metamorphism of the Onawa batholith, Piscataquis County, Maine..... 241

Page

PHYSICAL and chemical characteristics of the sediments of Lake Mendota, a fresh-water lake of Wisconsin, and a preliminary survey of the microflora with special reference to the precipitation of calcium carbonate 60, 104
PHYSIOGRAPHY of Cumberland Gap, Notes on 35, 96
— and structure at Cumberland Gap 1219
— of the southern Wasatch Mountains, Utah 49, 83
PIEDMONT benchlands 154
— of Maryland and Pennsylvania, Chambersburg (Harrisburg) peneplain in 35, 77, 553
PIKES PEAK region, Pegmatites of 240
PILARES Pipe, Origin of 163
PISCATAQUIS COUNTY, Contact metamorphism of the Onawa batholith 241
PLAINS, Three oreodont skeletons from the Lower Miocene of the Great 723
PLANE angles in geometrical crystallography, Use of 241
PLATTEVILLE faunas in northwestern Illinois 209
PLEISTOCENE changes of sealevel 177
— gravels of Iowa 48, 88
— history of the Huangho 1143
— period, Eldoran epoch of 669
— rodent fauna from the Carpinteria asphalt deposits 219
— sequence in the Connecticut Valley, Late 48, 85, 965
PLIOCENE, *Hyænognathus* from the Late 218
— sequence in the Berkeley Hills 151
POLYCHAETA from Minnesota, Middle Ordovician 1173
POLYMORPHIC forms of niter, Structure of 242
POSNJAK, E., BOWEN, N. L., and SCHAIRER, J. F.; System CaO-FeO-SiO_2 60, 74
—, KSANDA, C. J., and TUNELL, GEORGE; Atomic structure and geometrical constants of Tenorite 239
POTSDAM, Unusual brine from the 192
POTTER, F. C.; Scolecodonts from the Upper Richmond of Illinois 208
—, and CRONEIS, CAREY; New Mississippian starfish 211
POWERS, SIDNEY (death notice) 33
POWERS, W. E.; Extinct Lake San Augustin, New Mexico 35, 96
—; Multiple glaciation in the Sawatch Range, Colorado 210
PRELIMINARY generalized Cambrian time scale 190, 735
PRESIDENTIAL address; by Reginald A. Daly 43, 243
PRESIDENT of the Mineralogical Society, Address of 46
— — — Paleontological Society, Address of 44, 265
PRESIDENT'S Report to the Geological Society 6
PRESENT distribution and thickness of Mesozoic systems 64, 106, 827
PRESENTATION address (Penrose Medal) by W. O. Hotchkiss 57
— to Charles P. Berkey; by W. B. Scott. 42
— — H. L. Fairchild; by David White. 50
— — Edward B. Mathews; by Alfred C. Lane 40
— — Joseph Stanley-Brown; by Charles P. Berkey 36
— of Penrose Medal to E. O. Ulrich 57
Prioniodus Pander, Revision of 210

Page

PROCEEDINGS of the thirty-first annual meeting of the Cordilleran section of the Geological Society of America, held at Stanford University, California, April 8 and 9, 1932; Ralph W. Chaney, *Secretary* 145
— — — Forty-fifth Annual Meeting of the Geological Society of America, held at Cambridge, Massachusetts, Wednesday, Thursday, and Friday, December 28, 29, and 30, 1932 1
— — — thirteenth annual meeting of the Mineralogical Society of America, held at Cambridge, Massachusetts, December 28 and 29, 1932; by Frank R. Van Horn, *Secretary* 235
— — — twenty-fourth annual meeting of the Paleontological Society, held at Cambridge, Massachusetts, December 28, 29, and 30, 1932; by B. F. Howell, *Secretary* 181
— — a joint session of Section E of the American Association for the Advancement of Science and members of the Geological Society of America, held at Atlantic City, New Jersey, December 27, 1932; by Kirtley F. Mather, *Secretary* 173
PROGLACIAL waterfalls in valley development, Rôle of 35, 106
PROTEROZOIC formations in the southern part of central Siberia, Stratigraphy and tectonics of 49, 102
— glaciation in the southern part of central Siberia, Traces of 49, 102
PRYOR MOUNTAINS, Geological reconnaissance of 168
PYRITE concretions in the rocks of the Cleveland Quadrangle, X-ray study of 239
PYRITE-marcasite relation 240
PYROXENE, Johannsenite a new manganese 240
PYRRHOTITE in chalcopyrite, Vein-like masses of 240

QUATERNARY deposits, Zonal distribution and foreign affinities of Turritellas occurring in 216
QUARTZ, Cleavage and parting in 239
— veins, Microstructures of gold 167
QUEBEC, Silurian stromatoporoids of Gaspé 195
—, Structure and stratigraphy of Appalachians of southern 48, 79
—, Vein-like masses of pyrrhotite in chalcopyrite from the Waite-Ackerman-Montgomery mine 240
QUICKSILVER ores, Petrographic study of 158
QUIRKE, T. T.; Memorial of Arthur Gray Leonard 395

RAIN-WASH profiles of humid regions 154
RANGE and distribution of the genus *Lepidocyclina* Gümbel 205
RANSOME, F. L.; Memorial tribute to Johan Herman Lie Vogt 419
RAYMOND, P. E.; Memorial tribute to Johan Kiaer 415
REAGAN sandstone of Oklahoma, Cambrian oölitic hematite in 60, 86
RECENT changes in level along the Atlantic Coast 176
— history of the Black River valley, Vermont 49, 81
REEFS, Algal 1135
REFRACTION, Immersion liquids of intermediate 239

Page

REFRACTIVE index liquids, Convenient method of using..... 165
REGISTER of the 1932 meeting of the Cordilleran Section..... 172
——— Cambridge Meeting..... 65
——————— of the Paleontological Society 215
RELATION of Coccolithophores to the origin of Cretaceous chalk..... 154
—— the drumlins of the glacial clay of the Boston Basin.....49, 81
— between silver content and tetrahedrite in the ores of some western American mines..... 160
RELIZ CANYON, Miocene foraminifera from 165
REPORT of the Committee on cooperation with the Secretary of the XVI International Geological Congress, along the lines of mineralogy and petrology 238
—— Committee on stratigraphic practice, principles, and nomenclature. 45
—— the new committee on nomenclature and classification of minerals.. 238
——— Council of the Geological Society 6
——————— Paleontological Society 184
— on the Division of Geology and Geography of the National Research Council; by C. R. Longwell, *Representative* 60
— of the Editor of the Geological Society 27
——————— Mineralogical Society. 237
—— Finance Committee of the Geological Society..... 23
—— the President of the Geological Society 6
——— Representative of the Mineralogical Society on the National Research Council..... 238
——— Secretary of the Geological Society 10
——————— Mineralogical Society.. 236
——————— Paleontological Society 184
——— Section E..... 173
——— Service Committee of the Paleontological Society..... 189
——— Treasurer of the Geological Society 15
——————— Mineralogical Society. 237
——————— Paleontological Society 186
REPRESENTATIVE of the Geological Society, Election of..... 29
RESOLUTION of thanks adopted by the Geological Society session..... 64
RESSER, C. E.; Preliminary generalized Cambrian time scale.....190, 735
—, and HOWELL, B. F.; *Olenellus* zone and its faunas in the Appalachians. 191
REVISION of *Ligonodina* Ulrich and Bassler, 1926, and *Prioniodus* Pander, 1856 210
—— the Spokane Flood.....35, 68
RICH, J. L.; Angular coal fragments as evidence of a long time break in Pennsylvanian sedimentation in eastern Kansas..... 865
—; Notes on the physiography of Cumberland Gap.....35, 96
—; Physiography and structure at Cumberland Gap.....1219
—; Rock resistance and interfluvial degradation as dominant factors in geomorphology 64, 97

Page

RICHARZ, Stephen; Peculiar gneisses of a late formation in the Cascades, Washington 240
RICHMOND of Illinois, Scolecodonts from the Upper..... 208
— mastodon 200
RIVERSIDE COUNTY, Occurrence of monazite in a granodiorite pegmatite in. 161
ROCK resistance and interfluvial degradation as dominant factors in geomorphology 64, 97
ROCKY MOUNTAINS of northwestern Montana, Structure of.....48, 78
RODENT fauna from the Carpinteria asphalt deposits, Pleistocene..... 219
ROGERS, A. F.; Anauxite as a secondary mineral in some volcanic rocks of California and Arizona..... 159
—; Cleavage and parting in quartz.... 239
—; Convenient method of using refractive index liquids..... 165
—; Symbols of crystal optics..... 239
—; Use of plane angles in geometrical crystallography 241
RÔLE of analysis in scientific investigation 461
—— proglacial waterfalls in the valley development of central New York 35, 106
ROSEBURG Quadrangle, Oregon, Basic igneous rocks of.....60, 107
ROTATED faults in the desert range, southern Nevada.....64, 93
ROUSE, J. T.; Structure and alteration of the Deer Creek intrusive, Wyoming 241
RUDE, G. T.; Hydrographic data and their evaluation.....35, 97, 517
RUEDEMANN, RUDOLF; Sargasso-Seas in Paleozoic time.....64, 98
RUSSELL, BERT; Continental shelves as dynamic zones: a toggling-shelf orogeny 174
RUSSELL, R. J.; Alpine land forms of western United States.....35, 98, 927
RUSSELL, L. S., and WICKENDEN, R. T. D.; Discovery of an Upper Eocene mammalian fauna in southern Saskatchewan..... 199

SAINT VRAIN, batholith, Longs Peak-...49, 72
SAN AUGUSTIN, Lake.....35, 96
SAND barites, Origin of..... 240
— laden currents, Grooving of rock surfaces by..... 167
SANDIDGE, J. R.; Foraminifera from the Mesozoics of Montana..... 204
—, and HOWELL, B. F.; Upper Cambrian foraminifera 191
SANFORD, J. T.; Clinton of western New York 194
—; Richmond mastodon..... 200
SAN FRANCISCO Bay, Geologic cross-sections through the coast ranges immediately north of..... 155
SAN GABRIEL Mountains, Cenozoic history of..... 166
SAN LORENZO formation, Stratigraphic significance of foraminifera from.. 217
SANTA LUCIA Range, Structure of a portion of the southern..... 147
SANTA MONICA Mountains, Glacial epochs of 1041
SARGASSO-SEAS in Paleozoic time.....64, 98
SASKATCHEWAN, Discovery of an Upper Eocene mammalian fauna in southern 199
SAWATCH Range, Multiple glaciation in. 210

Page

SCHAIRER, J. F., POSNJAK, E., and BOWEN, N. L.; System CaO-FeO-SiO_2 ..... 60, 74
—, and TILLEY, C. E.; Some Carnegieite solid solutions 240
SCHALLER, W. T.; Johannsenite, a new manganese pyroxene 240
—; Report of the Treasurer of the Mineralogical Society 237
SCHENCK, H. G.; Stratigraphic and faunal relations of the Keasey formation of the Oligocene of Oregon .. 217
SCHISTS and granite of the Wachusett-Coldbrook Tunnel, Massachusetts, Origin of 60, 92
SCHRIEVER, WILLIAM, and F. A. MELTON; Meteorite scars in the Carolinas 35, 94
SCOLECODONTS 207
— from the Decorah formation of Missouri 208
— and conodonts from fissure fillings in the Niagaran of Illinois 207
— from the Silurian Edgewood formation 196
— from the Upper Richmond of Illinois .. 208
SCOTT, H. W.; Galena and Platteville faunas in northwestern Illinois ... 209
—, and CRONEIS, CAREY; Scolecodonts .. 207
—, —, —; — and conodonts from fissure fillings in the Niagaran of Illinois .. 207
SCOTT, W. B.; Presentation to Charles P. Berkey 42
SEALEVEL, On the determination of mean. 176
—, Pleistocene changes of 177
Scarlesia, Notes on 220
SECONDARY mineral, Anauxite as 159
SECRETARY'S Report to the Geological Society 10
SECTION E, Proceedings of joint session of members of Geological Society and 173
— —, Report of the Secretary of 173
SEDIMENTATION, Angular coal fragments as evidence of long time break in Pennsylvanian 865
—, Land movements and 169
— in Pennsylvania, "Catskill" ... 64, 108, 495
SEDIMENTS of the continental shelf off the northeastern United States 206
SEGREGATIONS from the fractional crystallization of basalt 163
SEISMIC epicenters in the West Indies and contiguous areas, Map showing 63, 84
SEISMOGRAPHIC methods for determining crustal structure, Experiments in testing 170
SERPENTINE, Contact conditions of some chromite deposits in 166
SESPE, Carnivora of the 199
—, Upper Eocene mammals from 158
— of the Las Posas Hills, Upper Oligocene mammalian fauna from 158
— Oligocene, Carnivora of the 199
SHASTA-KNOXVILLE succession in California 64, 68, 1237
SHEETFLOODS, Work of 35, 83
SHEPHERD, G. F., and CRONEIS, CAREY; Laboratory equipment for geologic instruction 541
SHEPARD, F. P.; Canyons off the New England Coast 63, 99
—, J. R. TREFETHEN, and G. V. COHEE; Origin of Georges Bank 35, 100
SIBERIA, Stratigraphy and tectonics of the Proterozoic formations in the southern part of central 49, 102

Page

SIBERIA, Traces of Proterozoic glaciation in the southern part of central 49, 102
SIERRA of California, Palisade Glacier of the High 575
SIERRA MAESTRA of Cuba; part of the northern rim of the Bartlett Trough 48, 101
SIERRA MOJADA, Occurrence of strontianite at 240
SIERRA NEVADA, Bedrock complex of 149
— — batholiths and the mother lode .. 49, 79
SILURIAN and Devonian strata of the Littleton Quadrangle, New Hampshire 196
— Edgewood formation, Scolecodonts from the 196
— sections near Mount Union, central Pennsylvania 64, 101
— — across northern Pennsylvania and southern New York, Subsurface 63, 84, 601
— stromatoporoids of Gaspé, Quebec ... 195
SILVER content and tetrahedrite, Relation between 160
SILVER-LEAD tungsten mineralization at Silver Mine, Missouri 64, 103
SIMI Valley, Upper Eocene mammals from the Sespe north of 158
SIMI Valley region, Carnivora of the Sespe Upper Eocene 199
SIMPSON, G. G.; Late Mesozoic and Early Tertiary in Patagonia 63, 100
—; Skull of the extraordinary Patagonian Eocene ungulate, *Trigonostylops* 198
SIMPSON Group of Oklahoma 34, 105
SKELETONS of three oreodonts 199
—, Three oreodont 723
SKULL of the extraordinary Patagonian Eocene ungulate, *Trigonostylops* ... 198
SLATES, Contact metamorphism of 989
— of Minnesota, Contact metamorphism of 46, 86, 989
SLAWSON, C. B.; New objective for the petrographic microscope 239
SMITHE, D. D.; Origin of the Pilares Pipe 163
SODIUM molybdo-tellurate, Haüy-Bravais lattice and other crystallographic data for 239
SOHLBERG, R. G.; Petrographic study of quicksilver ores and associated minerals from Pike County, Arkansas .. 158
SOLUTIONS, Some Carnegieite solid 240
SOME inter-relations between phases of alteration and types of rocks in the Tonopah mining district, Nevada .. 164
SONIC sounding in the West Indies and contiguous areas, Map showing ... 63, 84
SOPER, E. K., and GRANT, U. S., IV; Geology and paleontology of a portion of the metropolitan district of Los Angeles, California 148
SOUTH DAKOTA, Fauna of Fuson-Cloverly formation of 48, 74
— —, Notes on the Tertiary geology of western 200
SPECIAL business session 43
SPOKANE flood, New version of 675
— —, Revision of 35, 68
STANLEY-BROWN, JOSEPH, Presentation to 36
—; Report of the Editor of the Geological Society 28
—; Response by 38
STANTON, W. L., JR.; Structure of a portion of the southern Santa Lucia Range 147
STARFISH, New Mississippian 211

Page

STATISTICAL investigations of recent evidences of subsidence along the Atlantic coast 174
STAUFFER, C. R.; Middle Ordovician annelid jaws from Minnesota 192
—; ——— polychæta from Minnesota ... 1173
STERNBERG, C. M.; Carboniferous tracks from Nova Scotia 198, 951
STETSON, H. C.; Sediments of the continental shelf off the northeastern United States 206
STEVENSON, J. S.; Vein-like masses of pyrrhotite in chalcopyrite from the Waite-Ackerman-Montgomery Mine, Quebec 240
STILLWATER igneous complex, Montana. 241
STOCK, CHESTER; Carnivora of the Sespe Upper Eocene, Simi Valley region, California 199
—; Carnivora of the Sespe Oligocene, Las Posas Hills, California 199
—; *Hyænognathus* from the Late Pliocene of the Coso Mountains, California 218
—; Upper Eocene mammals from the Sespe, north of the Simi Valley, California 158
—; Upper Oligocene mammalian fauna from the Sespe of the Las Posas Hills, California 158
STOCKS, Differentiation as expressed by intrusive 241
STRATIFICATION of beach deposits, Observations on 171
STRATIGRAPHIC classification of Pennsylvanian and Permian beds in the Mid-Continent region 46, 95
— and faunal relations of the Keasey formation of the Oligocene of Oregon 217
— relationships in northwestern Pennsylvania 202
— significance of foraminifera from the type San Lorenzo formation, California 217
STRATIGRAPHY of the Appalachians of southern Quebec 48, 79
— and fauna of the Fuson-Cloverly formation in Montana, Wyoming, and South Dakota 48, 74
——— Hamilton group of eastern New York 200
——— marine Eocene of southwestern Oregon 205
— and orogeny of the Dahra Range, Algeria 64, 69
— of the lower and upper limestone formations, Ordovician Trenton group in New York 193
— and tectonics of the Proterozoic formations in the southern part of central Siberia 49, 102
— in trans-Pecos Texas, Permian 64, 90
STROMATOPOROIDS of Gaspé, Silurian ... 195
STRONTIANITE at Sierra Mojada, Occurrence of 240
STRUCTURAL history of the fracture systems at Grass Valley, California .. 48, 88
— relationships of the coast and continental margin of northern California 152
STRUCTURE and alteration of the Deer Creek intrusive, Wyoming 241
— at Cumberland Gap 1219
—, Experiments in testing seismographic methods for determining crustal 170
— and physiography of the southern Wasatch Mountains, Utah 49, 83

Page

STRUCTURE of the polymorphic forms of niter 242
——— Rocky Mountains of northwestern Montana 48, 78
——— a portion of the southern Santa Lucia Range 147
— and stratigraphy of the Appalachians and southern Quebec 48, 79
— of the Tertiary formations of Maryland 49, 83
STUDIES in North American Mississippian corals 212
SUBSIDENCE along the Atlantic coast, Statistical investigations of recent evidences of 174
— myth, New Jersey Coast—the two feet per century 178
SUBSURFACE Devonian and Silurian sections across northern Pennsylvania and southern New York. 63, 84, 601
SWARTZ, F. M.; Silurian sections near Mount Union, central Pennsylvania 64, 101
SYMBOLS of crystal optics 239
SYSTEM CaO-FeO-SiO_2 ..... 60, 74
TABER, STEPHEN; Sierra Maestra of Cuba; part of the northern rim of the Bartlett Trough 48, 101
TALIAFERRO, N. L.; Bedrock complex of the Sierra Nevada, west of the southern end of the mother lode .. 149
—; Oligocene sediments of the Yakataga-Controller Bay region, Alaska. 167
TARR, W. A.; Origin of the sand barites of the Lower Permian of Oklahoma. 240
TAYLOR, F. B.; Making of arcuate mountain ranges of Asia 63, 102
TCHURAKOV, A. N.; Stratigraphy and tectonics of the Proterozoic formations in the southern part of central Siberia 49, 102
—; Traces of Proterozoic glaciation in the southern part of central Siberia 49, 102
TECTONICS of the Proterozoic formations in the southern part of central Siberia 49, 102
TENNANTITE, A new tin-bearing 240
TENORITE, Atomic structure and geometrical constants of 239
TERRACES and coulees along the Columbia River near Lake Chelan, Washington 783
— of the Yellow River, China 35, 71
TERTIARY in Patagonia, Early 63, 100
— deposits, Zonal distribution and foreign affinities of Turritellas occurring in 216
— flora from east-central Africa 213
— formations of Maryland, Structure of 49, 83
— geology of western Nebraska, western South Dakota, eastern Wyoming, and related areas, Notes on ... 200
TETRAHEDRITE, Relation between silver content and 160
TEXAS, Geological map of 34, 82
—, Permian stratigraphy in trans-Pecos 64, 90
THEORY of determinants applied in crystallography 241
THOM, W. T., JR.; Geologic Problems of the Beartooth-Bighorn Region 34, 76
THOMPSON, W. O.; Observations on the stratification of beach deposits 171
THREE oreodont skeletons from the Lower Miocene of the Great Plains. 723
THRUST faults of peculiar type 48, 93
TILLEY, C. E., and SCHAIRER, J. F.; Some Carnegieite solid solutions ... 240

Page

TILLITE in the Triassic of Massachusetts, Is there....49, 70
TIME scale, Preliminary generalized Cambrian....190, 735
TIN-BEARING tennantite, A new.... 240
TOGGLING-SHELF orogeny, Continental shelves as dynamic zones.... 174
TOLMACHOFF, I. P.; Discovery of Upper Cretaceous fauna in the Asphalt Ridge, Utah....64, 103
TOLMAN, CARL; Silver-lead tungsten mineralization at Silver Mine, Missouri....64, 103
TONOPAH mining district, Some interrelations between phases of alteration and types of rocks in.... 164
TOWNSEND, C. W.; Recent changes in level along the Atlantic Coast.... 176
TRACKS from Nova Scotia, Carboniferous 198, 951
TRACES of Proterozoic glaciation in the southern part of central Siberia..49, 102
TRAINER, D. W., JR.; Unusual brine from the Potsdam of central New York. 192
TRANS-PECOS Texas, Permian stratigraphy in....64, 90
TRAVERSE-HAMILTON ostracode correlations.... 197
TREASURER'S Report to the Geological Society.... 15
TREFETHEN, J. R., G. V. COHEE, and F. P. SHEPARD; Origin of Georges Bank 35, 100
TRENTON group in New York, Ordovician.... 193
TRIASSIC of Massachusetts, Is there tillite in the....49, 70
— influences on Appalachian drainage 35, 94
— series in Pennsylvania, Thickness and structure of.... 178
Trigonostylops, Skull of the extraordinary Patagonian Eocene ungulate.. 198
TUNELL, GEORGE, POSNJAK, E., and KSANDA, C. J.; Atomic structure and geometrical constants of Tenorite.... 239
TUNGSTEN deposit at Mill City, Nevada. 240
— mineralization at Silver Mine, Silver-lead....64, 103
TURNER, F. E.; Stratigraphy of the marine Eocene of southwestern Oregon.... 205
TURRITELLAS, Zonal distribution and foreign affinities of.... 216
TURTLES from the Belly River formation, New.... 207
TWENHOFEL, W. H., WILLIAMS, F. T., and MCCOY, ELIZABETH; Physical and chemical characteristics of the sediments of Lake Mendota, a fresh-water lake of Wisconsin, and a preliminary survey of the microflora with special reference to the precipitation of calcium carbonate 60, 104

UDDEN, JOHAN AUGUST....33, 402
ULRICH, E. O.; Simpson Group of Oklahoma....34, 105
—, Presentation of Penrose Medal to... 57
UNGULATE, Skull of Patagonian Eocene. 198
UNITED STATES, Alpine land forms of western....35, 98, 927
— —, Sediments of the continental shelf off the northeastern.... 206
UNUSUAL brine from the Potsdam of central New York.... 192
UPPER Cambrian foraminifera.... 191

Page

UPPER Devonian rocks at Ithaca, New York.... 201
— — of the New York region.... 177
— Eocene mammals from the Sespe, north of the Simi Valley, California.... 158
— Oligocene mammalian fauna from the Sespe of the Las Posas Hills, California.... 158
URANINITE age, Five fold check of.... 240
USE of plane angles in geometrical crystallography.... 241
UTAH, Discovery of Upper Cretaceous fauna in the Asphalt Ridge....64, 103
—, Structure and physiography of southern Wasatch Mountains....49, 83

VALLEY development, Rôle of proglacial waterfalls in....35, 106
VAN HORN, F. R.; Proceedings of the thirteenth annual meeting of the Mineralogical Society.... 235
—; Report of the Secretary of the Mineralogical Society.... 236
—, and VAN HORN, K. R.; X-ray study of pyrite or marcasite concretions in the rocks of the Cleveland, Ohio, Quadrangle.... 239
VEIN-LIKE masses of pyrrhotite in chalcopyrite from the Waite-Ackerman-Montgomery mine, Quebec.... 240
VEINS, Microstructures of gold quartz.. 167
VENIAMINOF volcano, Alaska....35, 90
VENTURA COUNTY, Eocene Llajas formation.... 217
VERMONT, Glacial and Recent history of Black River valley....49, 81
VER WIEBE, W. A.; Present distribution and thickness of Mesozoic systems 64, 106, 827
VIRGINIA, Geology of the Hot Springs district....63, 72
VOGT, JOHAN HERMAN LIE....33, 419
VOLCANIC sequence of Mount Rainier, Certain features of.... 148
VOLCANOES, Aniakchak and Veniaminof 35, 90
VON ENGELN, O. D.; Palisade Glacier of the High Sierra of California.... 575
—; Rôle of proglacial waterfalls in the valley development of central New York....35, 106
VOTE on adoption of new By-laws.... 43
— of thanks of the Mineralogical Society.... 242
— — — — — Paleontological Society.. 215

WACHUSETT-COLDBROOK Tunnel, Origin of schists and granite of....60, 92
WAITE-ACKERMAN-MONTGOMERY mine, Vein-like masses of pyrrhotite in chalcopyrite from.... 240
WALLOWA Mountains batholith, Certain pegmatite facies of.... 160
WARREN, H. V.; Relation between silver content and tetrahedrite in the ores of some western American mines.. 160
WARTHIN, A. S., JR.; Traverse-Hamilton ostracode correlations.... 197
WASATCH Mountains, Structure and physiography of southern....49, 83
WASHBURNE, C. W.; Shear-control of dikes and sills near Eugene, Oregon....60, 107
WASHINGTON, Peculiar gneisses of a late formation in the Cascades.... 240
—, Terraces and coulees along the Columbia River near Lake Chelan... 783
WATERFALLS in valley development, Rôle of proglacial....35, 106

Page

WATERS, A. C.; Glacial features along Columbia River near Lake Chelan.. 150
—; Terraces and coulees along the Columbia River near Lake Chelan, Washington 783
—, and WELLS, F. G.; Basic igneous rocks of the Roseburg Quadrangle, Oregon 60, 107
WHEELER, H. E.; Fusulinids of the McCloud and Nosoni formations of north California..... 218
WHITE, DAVID; *Megalopteris* and the giant winged cardiocarps..... 213
—; Presentation to H. L. Fairchild.... 50
WHITLOCK, H. P.; Memorial of George Frederick Kunz..... 377
WEATHERING of the Medford Diabase..60, 92
WEAVER, C. E.; Geologic cross-sections through the Coast Ranges immediately north of San Francisco Bay.. 155
WELLS, F. G., and WATERS, A. C.; Basic igneous rocks of the Roseburg quadrangle, Oregon.....60, 107
WEST INDIES and contiguous areas, Map showing seismic epicenters, sonic sounding and gravity stations in the 63, 84
WESTGATE, L. G., and FISCHER, R. P.; Bone beds and crinoidal sands of the Delaware limestone of central Ohio 46, 108, 1161
WICKENDEN, R. T. D., and RUSSELL, L. S.; Discovery of an Upper Eocene mammalian fauna in southern Saskatchewan 199
WILLARD, BRADFORD; "Catskill" sedimentation in Pennsylvania..64, 108, 495
—, and CLEAVES, A. B.; Hamilton group of eastern Pennsylvania.....197, 757
WILLIAMS, F. T.; MCCOY, ELIZABETH, and TWENHOFEL, W. H.; Physical and chemical characteristics of the sediments of Lake Mendota, a freshwater lake of Wisconsin, and a preliminary survey of the microflora with special reference to the precipitation of calcium carbonate..60, 104
WILLIAMS, I. A.; Geology of Ariel Dam site 157
WILLIAMS, M. Y.; Land movements and sedimentation 169
WILSON, R. W.; Pleistocene rodent fauna from the Carpinteria asphalt deposits 219
WIND River Basin, Geology of the central and southern parts of.....35, 71
WISCONSIN, Physical and chemical characteristics of sediments of Lake Mendota 60, 104
— Glacier in Maine, Dissipation of....47, 95
WOLF, A., and LANE, A. C.; Weathering of the Medford Diabase.....60, 92
WOOD, H. O., BUWALDA, J. P., and GUTENBERG, BENO; Experiments in testing seismographic methods for determining crustal structure..... 170
WORK of sheetfloods.....35, 83
WYOMING, Discovery of a fossiliferous Lower Devonian channel deposit at Beartooth Butte..... 197
—, Fauna of Fuson-Cloverly formation of 48, 74
—, Lower Devonian flora from Beartooth Butte..... 213
—, Notes on the Tertiary geology of eastern 200
—, Structure and alteration of the Deer Creek intrusive..... 241
YAKATAGA-CONTROLLER Bay region, Oligocene sediments of..... 167
YAKATAGA formation, Fauna of..... 168
YELLOW River, Terraces of.....35, 71
ZONAL distribution and foreign affinities of Turritellas occurring in Cretaceous, Tertiary, and Quaternary deposits on the Pacific Coast of North America 216